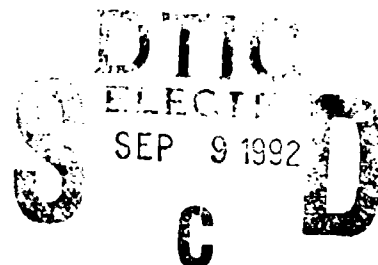


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ENGINEER OPERATIONS
DURING THE VICKSBURG CAMPAIGN



A thesis presented to the Faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE

by

ROBERT M. PUCKETT, MAJ, ARNG
B.A., California State University at Long Beach, 1974

Fort Leavenworth, Kansas
1992

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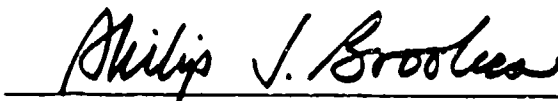
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ABSTRACT

ENGINEER OPERATIONS DURING THE VICKSBURG CAMPAIGN by Major Robert M. Puckett, ARNG, 192 pages.

This study investigates the role that Engineer Operations played in the Vicksburg Campaign of the American Civil War. A background study and description is made of the structure, composition, capability, and employment of engineer officers and units during the American Civil War. The Vicksburg Campaign is analyzed in detail to determine the contributions that Engineer Operations made to the Campaign's success. The Campaign is broken down into four phases: (1) the Confederate Fortification of Vicksburg, (2) Operations in the Bayous, (3) the Campaign of Maneuver, and (4) the Siege of Vicksburg. Each phase is examined in an engineer context to determine what type of Engineer Operations were conducted and whether they were critical to that phase and the Campaign overall. The final conclusions derived from this study are that Engineer Operations were critical to the success of the Campaign and without the engineering capability the Union Army possessed, it would not have been able to overcome the natural and manmade obstacles faced in the effort to seize Vicksburg.

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CHAPTER 1

INTRODUCTION AND BACKGROUND

The topic of this thesis and the primary question I propose to answer is: how were engineer operations conducted during the Vicksburg Campaign and were they significant in its outcome? In order to answer my primary question, I must answer these secondary questions: (1) what was typical of engineer operations during this period? and (2) what were the types of engineer operations conducted during the campaign? By answering these questions, I hope to provide new insight in this important campaign.

For the purposes of this paper, the Vicksburg Campaign begins with the appointment of U.S. Grant to command the Department of the Tennessee in October of 1862. The study will terminate with the surrender of Vicksburg on July 4, 1863. During this period I will focus on how U.S. Grant conducted a campaign of various operations in his attempt to capture Vicksburg from an engineer operations standpoint. Vicksburg was one of the keys to control of the Mississippi River during the American Civil War. The side, North or South, that controlled the river possessed major

strategic as well as political advantages. For this reason, a major campaign of the war was fought for the possession of Vicksburg.

The unique topography of the area of operations and the siege aspect of the campaign made combat engineer techniques and capabilities of the armies critical. The understanding of these facets of engineer operations will have a dramatic effect on understanding the entire campaign.

Engineer battlefield functions are the keystone to this study and require definition at this point. Engineer operations are the actions of modifying the battlefield to facilitate the effects of fire and maneuver. There are five functional areas within engineer operations: mobility, countermobility, survivability, sustainment, and topographical. Mobility enables the commander to maneuver his forces into positions of advantage over the enemy by reducing obstacles and fortifications in his way. Countermobility allows the commander to impede his enemy's maneuver and fires by creating obstacles or reinforcing natural terrain with obstacle systems. Survivability operations provide cover and concealment from enemy fires or observation. Sustainment operations are actions taken to facilitate the creation and maintenance of lines of communication. Finally, topographical engineering provides the commander with terrain analysis and most importantly maps.¹ All of these engineer functions were of paramount

importance to Northern and Southern operations during this campaign as I shall illustrate.

The importance of this study goes beyond understanding just the Vicksburg Campaign. It is reasonable to assume that future military operations conducted by the United States Armed Forces will not always take place on ideal terrain. Learning how leaders of past battles used engineers and tackled mobility, countermobility, and survivability problems provides lessons to leaders of today. The results of this thesis question may well aid leaders in understanding Airland Battle Doctrine and conducting future campaigns.

The decisions that resulted in the Vicksburg Campaign were made very early in the war by the patriarch of the Army, General Winfield Scott. As General in Chief of the Army, he was responsible for planning and conducting the war. His plan, which even though he was soon replaced by younger men, was the basic plan or at least the foundation of the strategy followed throughout the war. The so called "Anaconda Plan" called for a naval blockade of the South which would seal out economic aid from Europe or elsewhere. It would extend from the Chesapeake Bay, around Florida, and all the way to Matamoros, Mexico. An important aspect of this plan was an internal split of the Confederacy by sending an army supported by gunboats down the Mississippi River from Cairo, Illinois to New Orleans to cut off the

Confederacy from the cattle and grains of Texas. Scott, a Virginian, felt that his fellow southerners were still loyal Americans and could be prodded back into the Union economically without the necessity of the use of arms.²

President Lincoln narrowed the strategic focus even more by stating that Vicksburg itself was the key to winning the war. The nation was focused upon the political center of Richmond, but he looked to the economic link of Vicksburg. He felt that Vicksburg's strategic position, sitting on the banks of the Mississippi River near the mouths of the Arkansas and Red Rivers, made it key to strangling the Confederacy. The Red and Arkansas Rivers were transportation networks that brought cattle, hogs, and corn from the Trans-Mississippi west to the Mississippi River and on to the rail head at Vicksburg. These vital war supplies were then shipped by rail from Vicksburg to the heart of the Confederacy. This rail head was also key to shipping troops from the Trans-Mississippi west to the battles of the east. Vicksburg was a key that the Union must have in its pocket in order to subdue the Confederacy.³

The leaders in the south viewed Vicksburg in the same light as Lincoln. President Jefferson Davis toured the Tennessee and Mississippi areas in December of 1862 to apprise himself of the situation and to raise the morale of the inhabitants and soldiers of the region. As important as the storehouse that Tennessee was to the Confederacy, he

felt that its loss paled in comparison to the loss of Vicksburg. He demonstrated this belief by ordering the transfer of troops from General Braxton Bragg's command to General Pemberton in spite of General Joseph E. Johnston's, the region commander, strong protests. To lose Vicksburg, he felt, would result in the loss of the Mississippi River and thereby Texas, west Louisiana, Arkansas, and the hope of recapturing Missouri.⁴ Vicksburg was just as important to the Confederate defense network as it was to the Union offensive plan.

Thus the stage was set for a tenacious battle between the forces of the North and of the South for Vicksburg. It would be a long frustrating campaign for both sides. Frustrating for the South because of its siege aspects and ultimate loss. Frustrating for the North due to the extreme effort and time required to campaign in this geographically bizarre terrain.

One need only look at the map to see that the terrain around Vicksburg is not suited for large scale military operations. Vicksburg sits on the banks of the Mississippi River. The Mississippi River valley has three types of terrain that drastically effect movement in the Vicksburg Campaign: the flood plain, the loess hill mass, and the inland plain.⁵ Understanding the effect these terrain types have on mobility will help the reader appreciate the nature of the task the engineers in both armies faced.

The Mississippi is a classical meandering river with a wide flood plain and a course that is wide and windy. From Memphis south, both sides of the river are bordered by this wide flood plain. The flood plain was formed as the river changed course in its historic winding back and forth across the Mississippi River valley. As the river flowed south, it deposited fine sand along its banks creating natural levees. At flood stages it would break through its levees and change its course thereby creating new river beds. The result of these endless changes was the creation of low flat plains with mazes of countless levees winding through them paralleling the river. Every spring the river would flood and the low areas were filled with water and silt deposits while only the levees remained dry. Swamps and bogs were formed in these low areas choked with willows, bald cypress or other water tolerant trees, plants, and vines. The composition of the flood plain soil was a sticky clay. Some portions of the old river bed retained water permanently and remained as common oxbow lakes. These lakes varied in size and depth. Other linear areas that retained water most of the year are termed sloughs or bayous. The flood plain was cut by a series of sloughs and bayous as well as smaller rivers and creeks. The Mississippi River flood plain near Vicksburg was essentially an enormous obstacle that made movement on land through it next to impossible.⁶

Settlement in the flood plain was generally limited to the natural levees. Plantations, with cotton as the principle crop, were suited to this environment. Many plantations were lined up along these natural levees one after another. Each became a self sufficient town in a sense. Connecting transportation was conducted along the river or bayous.⁷ These plantations become important to the Union Army as sources of engineer material.

The Mississippi River flood plain is bordered on the east by a loess hill mass known as the eastern wall of the Mississippi Valley. The bluffs that Vicksburg sits on is part of this eastern wall. The eastern wall begins where the Ohio River joins the Mississippi River and extends down the entire length of the valley. The Mississippi River only approaches this wall in several locations along its course. From Memphis south, the first place the river touches the eastern wall is Vicksburg. The river recedes and again approaches the eastern wall near Grand Gulf. The bluffs, over 200 feet high with a 22.5% grade from the rivers edge at Vicksburg, continue like this north and south for 50 miles in either direction.⁸ The bluffs extend north from Vicksburg roughly along the Yazoo River to Snyder's Bluff and up to Yazoo City. The width of the eastern wall of loess bluffs extends inland anywhere from ten to fifteen miles to the east where the land changes to inland plain.

The composition of the bluffs gives it interesting characteristics. They are made up of loess deposits. Loess contains calcium carbonate and this makes the hill mass subject to drastic erosion. The hill mass tends to be a complex of steep ridges running in all directions. The tops of these ridges were the only areas cultivated. The ravines were damp and filled with eroded silt and choked with thick undergrowth. Movement through this area is confined to narrow ridge line roads that wind and twist with the terrain.⁹

The inland plains are more conducive to movement as they consist of rolling terrain that is fairly open. The soil consists of sandy gravel and clay. The area was largely cultivated by subsistence farmers and contained few extensive patches of woodland.¹⁰ A network of roads, muddy bogs in rainy weather and dusty in dry weather, existed through this area and facilitated movement.¹¹

We can see then that the terrain of the Vicksburg Campaign placed unusual challenges to General Grant in his attempt to seize Vicksburg. Vicksburg itself sits on the first high ground encountered heading south from Memphis. It is located on a 200 foot bluff on the eastern bank of the Mississippi River just down stream from a hairpin turn in the river. Approach from the north on the east side of the river is obstructed by the Yazoo River with its accompanying flood plain. On the west bank of the Mississippi River, the

flood plain restricted movement of large formations of troops to water transport or to making a tremendous effort of road building and bridging along the connecting levees. The fact that Vicksburg was fortified by the Confederates after the Union capture of New Orleans in April of 1862 and bristled with artillery, made it unapproachable from the river. If General Grant was able to get his army below Vicksburg on the east bank, the loess hills were difficult to get through. Finally, the inland plain was flatter and more open than the loess hill mass but it did contain major water obstacles of the Big Black River and Bayou Pierre as well as lesser creeks.¹² Vicksburg indeed seemed much like the Gibraltar of the West as it was sometimes referred.

Approach from the south held many of the same terrain problems but had the additional handicap of the Confederate fortification at Port Hudson. Port Hudson located 250 river miles south of Vicksburg, with its fortified batteries, prevented Union naval forces from moving up river to land troops close enough to approach Vicksburg from the south. The fact that Confederate controlled territory extended from Port Hudson north also made a land approach impracticable. General Grant was advised early in the campaign by General Halleck not to rely upon assistance from below Port Hudson, as the likelihood of its capture was slim.¹³ As General Grant began his campaign to capture Vicksburg in October

1862, it was painfully obvious geography limited his options.

He began operations in December 1862, with a combined amphibious and land operation. The amphibious portion of the operation under Major General William T. Sherman sailed from Memphis down the Mississippi, up the Yazoo, and disembarked at Chickasaw Bayou to assault the bluffs north of Vicksburg. Grant led the land portion of the operation by advancing down the Mississippi Central Railroad from Bolivar, Tennessee to approach Vicksburg from the rear via the state capitol of Jackson. The plan called for a coordinated attack by both forces. Grant's lines of communication were cut by Confederate cavalry under the command of Major General Earl Van Dorn and was forced to return north. Sherman, unaware of Grant's withdrawal, attacked the high ground north of Vicksburg on December 29th by crossing Chickasaw Bayou and maneuvering his force thru the swamps. Sherman suffered a stinging defeat due to the nature of the terrain and withdrew to Milliken's Bend upriver. Thus ended the first phase of Grant's campaign to seize Vicksburg.¹⁴

Grant's next phase of operations against Vicksburg has been referred to as the Bayou Campaign. He personally assumed command on January 30, 1863, and moved the rest of his army down to Milliken's Bend just up river from Vicksburg. He immediately began seeking ways around

Vicksburg.¹⁵ By this time, the winter rains had flooded the land along the river near Vicksburg and made land operations impossible. From January to late March of 1863, Grant made four attempts to reach dry ground east and south of Vicksburg. The first attempt was the digging of a canal to reroute the Mississippi River away from Vicksburg thereby allowing passage. The second was the cutting of levees and clearing of bayous to connect a bypass through Lake Providence to the Ouachita and Red Rivers and re-entering the Mississippi River below Vicksburg. The third and fourth attempts were efforts to clear paths via creeks and bayous into the Yazoo River getting east of and behind Vicksburg. These various canal operations failed to achieve their ultimate goal.¹⁶

The third phase of the Vicksburg Campaign began in late March. The river level began to drop and the adjacent land began to dry. Grant was able to march his army south of Vicksburg by building roads and improvising bridges through the swamps and over the bayous along the western bank of the Mississippi River reaching Hardtimes on April 29, 1863.¹⁷ During the same period Admiral David Porter's fleet, with the army's supplies, had run the river past the Vicksburg batteries the night of April 16, 1863.¹⁸ On April 30, 1863, Grant conducted a crossing of the Mississippi River, the largest amphibious operation in American military history to that time.¹⁹ Upon reaching dry ground on the

east bank of the Mississippi River below Vicksburg, Grant's army was finally in position to conduct a land campaign to capture Vicksburg.

Grant's position was a precarious one. He was deep in enemy territory with the Mississippi River behind him, a large Confederate force at Vicksburg under Lieutenant General John C. Pemberton, and another assembling at Jackson under General Johnston. He conducted a Napoleonic move of advancing between the two forces to defeat the weaker before turning on the stronger.²⁰ Grant realized he couldn't attack Vicksburg from the rear until he had cut the railroad supply line from Jackson to Vicksburg and had eliminated the threat to his rear posed by General Johnston's force in Jackson.²¹

In his advance northeast, he fought sharp battles at Port Gibson and Raymond before reaching the capitol at Jackson. Upon seizing Jackson, he left Sherman in charge of its destruction as a supply and transportation center and turned his other corps east to face Pemberton who had marched out of Vicksburg to meet him. A tenacious battle was fought between Grant and Pemberton at Champion Hill. Upon being defeated at Champion Hill and the subsequent battle at the Big Black River Bridge, Pemberton withdrew into the defenses of Vicksburg to await his fate.

Grant quickly followed the Confederates to the very works of Vicksburg. Inspired by their success of the last

twenty days since crossing the Mississippi River and thinking the Confederate's morale shattered, General Grant immediately ordered a general assault of the Confederate works on May 19, 1863. The Confederates fought off the assaults inflicting heavy casualties upon the Union attackers. A second attempt three days later proved no more successful. Grant at this point decided to lay siege and thus ended the third phase of the campaign.²²

The fourth phase of the Vicksburg Campaign began with the spade. The heavy casualties of May 19, 1863 and May 22, 1863 not only convinced General Grant that the proper course was to conduct a siege and incur no more casualties, his officers and men also shared this opinion. Vicksburg was cut off and the union supply lines were intact and improving. He could simply wait and starve them out. All he needed to do was hold his position.²³

General Grant's army used the spade in earnest. The Union army built trenches and gun positions opposite the extensive Confederate fortifications. They also built approach trenches and mines. Grant was willing to conduct the siege waiting game, but he also wanted to end the siege as soon as possible to release the troops tied down at Vicksburg to continue the war elsewhere. The intent of the mines and approach trenches was to get his forces as close to the Confederate works as possible in the event another assault was required. He wished to reduce the amount of

open ground his troops would have to cross. He also knew that Johnston was still to his rear and could possibly be building a relief column to break the siege. He fortified to keep Pemberton in and Johnston off his back.

The campaign finally ended on July 4, 1863. Pemberton, realizing that there was no hope of breaking out nor withstanding another general assault, decided that his only recourse was to surrender and spare his men further hardship.²⁴ The results of the campaign yielded 29,500 Confederate prisoners, 172 cannon, and 60,000 stands of arms. This was the largest army ever captured in American history to this point. The Union cost was 10,000 killed, wounded, and missing. The most significant result of the surrender of Vicksburg was, with the subsequent surrender of Port Hudson, Federal control of the Mississippi River for the remainder of the war.²⁵

The campaign is unique in many aspects. It is unique in that Grant violated common held theory by operating in enemy territory with a large army without secure lines of communication. His army, to a large degree, lived off the land. Another aspect which is the focus of this paper is the engineer operations conducted. His speed of movement thru extremely difficult terrain was successful due to his ability to leap across obstacles. The attempts to change the course of a river defies the imagination. Finally, the

use of fortifications is critical to the way the campaign was fought.

Engineer operations during the American Civil War were not conducted as they are today. Engineer units were few and employed primarily in constructing semi-permanent structures such as forts, field works, bridges, or roads. Even then, the labor was actually performed by Infantry units or employed freedmen supervised by military engineers.²⁶ In fact, at the beginning of the war there were only ninety-three engineer officers in the entire American Army, of whom forty-eight were in the Corps of Engineers and forty-five in the Corps of Topographical Engineers.²⁷ Records indicate the existence of only one company of engineers composed of 100 men. In August of 1861, Congress authorized the formation of three engineer companies in addition to the already existing company. Each company was to consist of 150 enlisted men. Later in July of 1862, Congress authorized or more correctly recognized the raising of volunteer engineer regiments. The regiments were to be composed of twelve companies each with the same table of organization and equipment as the regular army Corps of Engineer companies.²⁸ See the following chart for the number of actual and authorized units.²⁹

<u>Type of Organization</u>	<u>Number</u>		<u>Authorized</u>
	<u>Authorized</u>	<u>Actual</u>	<u>Strength</u>
Company, Volunteer	2	2	150
Battalion, Regular	1 (5 Cos)	1 (4 Cos)	750
Regiment, Volunteer			
(12 Cos)	5	5	1,800
Regiment, Veteran Volunteer			
(12 Cos)	5	1	1,800
95th, 96th, 97th, 98th and			
99th Infantry (colored)	5	5	1,800

Engineer troops and units were scarce resources for armies in the field. Records indicate that two of the eleven volunteer engineer regiments in the Union Army participated in the Vicksburg Campaign. The Corps of Engineer companies and other volunteer regiments were employed in the east primarily.³⁰ Thus other volunteer engineer organizations, often referred to as Pioneer Corps, were raised generally operating under the supervision of a trained civil engineer assigned to a staff headquarters. The normal configuration of the Brigade Pioneer Corps consisted

of fifteen or thirty detailed men, usually selected because of their skill as mechanics, or expertness as ax-men, supplemented by from thirty to fifty stalward negroes; the whole commanded by a captain or lieutenant possessing some elementary knowledge of bridge and roadway construction.³¹

Each division commander had an officer on his staff functioning as the division engineer. Corps commanders had an officer on his staff titled "the Chief Engineer" of the Corps with one or two assistants that possessed some knowledge of surveying and topographical sketching. The army commander was usually able to avail himself of the services of a regular army engineer as his military engineer adviser. Major General James B. McPherson, a corps commander at Vicksburg, first joined Grant's command in that capacity.³²

The engineer officer was an extremely important member of a senior commander's staff. He performed such important functions as supervision of road, bridge, and camp construction; route reconnaissance; defensive and offensive terrain selection; camp site selection; map making; and positioning of artillery and infantry to maximize the effectiveness of their fires.³³ As stated above, there were far too few of these essential officers.

Confederate engineer capabilities were even more limited than Federal. At the beginning of the war, there of course was no organized Corps of Engineers to build from. Of the figures listed above for the U.S. Army Corps of

Engineers, only fifteen engineer officers resigned their commissions to serve in the Confederate Army.³⁴ Initially, Virginia created a state corps of engineers later joining with the Confederate Corps of Engineers.³⁵ On March 7, 1861, the Confederate Congress authorized the creation of the Corps of Engineers consisting of a colonel, four majors, five captains and non-commissioned officers and enlisted men as required to form a one hundred man company of sappers, miners, and pontoniers. The colonel was responsible to train and equip this organization to enable it to break into detachments to supervise and aid in engineer operations as required. In May of 1861, Congress increased the Corps of Engineers with an additional company of sappers and bombardiers and authorized officer positions for one lieutenant colonel and five more captains.³⁶ Training was limited and engineer expertise was primarily based upon civilian experience. Pioneer Corps were created much like in the Federal army. In 1863 two additional regiments of engineer troops were formed. The first regiment with two companies from the second served with the Army of Northern Virginia. The other companies of the second regiment were parceled out elsewhere.³⁷

Engineer equipment was certainly primitive by our standards. Picks, shovels, and axes seemed to be the general equipment. Pontoons for quick bridging were

available at large organizations such as army or corps and were carried in wagon trains.

A typical train consisted of 34 pontoons on wagons. Each pontoon (about 26 feet long and 5 1/2 feet beam) contained, among other gear, ropes, oars and an anchor. The timbers were on other wagons and the chesses, the cross planks, were carried on 22 chess wagons. These also carried cables and chains. There were usually four tool wagons and two travelling forges, plus supply wagons for the bridging crews.³⁸

There were several instances of pontoon bridge use in the Vicksburg Campaign. Most bridging material however, seemed to come from the surrounding area. Improvization appeared to be the engineer's mainstay. pontoons made from cotton bales, tree trunks for corduroying roads, planks and beams from buildings for bridges, and ropes from farms were the engineer's building materials. River dredges were brought down from Memphis to be used in canal construction. General McPherson invented a type of saw for sawing stumps underwater in the bayou clearing operations. The truly amazing thing is that these resources were adequate to do the job.

Vicksburg was the key to commanding the Mississippi River. Both the North and the South needed it. The Vicksburg Campaign was the result of the efforts of both the North and South to secure it. This unique campaign involved engineering operations of a dramatic proportion and unique nature. These operations were critical in the success of

both rivaling factions and deserve detailed study and analysis.

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²⁸Phillip M. Thienel, "Engineers in the Union Army, 1861-1865. Part I. Initial Organization," The Military Engineer 315 (January-February, 1955): 36.

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³⁰Phillip M. Thienel, "Engineers in the Union Army, 1861-1865. Part III. Department of the South and Army of the James," The Military Engineer 316 (March-April, 1955): 113-115.

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³³Ibid, 305-306.

³⁴Ness, 179.

³⁵Jack Coggins, "The Engineers Played a Key Role in Both Armies," Civil War Times Illustrated (January, 1965): 40.

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CHAPTER 2

THE CONFEDERATE FORTIFICATION OF VICKSBURG

One of the key aspects of the Vicksburg Campaign is the effect the river batteries and land fortifications of Vicksburg had upon the strategy, operations, and tactics of both Union and Confederate forces. Before beginning the examination of the engineer operations and their importance to the Vicksburg Campaign, it is necessary to lay a foundation of understanding of what the Vicksburg River batteries and land fortifications were and what their strengths consisted of. In order to put this into the right context, I will describe the Confederate efforts to fortify Vicksburg and the initial efforts of the Union forces to capture or bypass it during the period beginning with the the fall of New Orleans on April 25, 1862, and ending when General Grant takes command of the Department of the Tennessee in October 1862. These efforts dramatically effect the conduct of the entire campaign and explain when, where, how, and why the fortifications came about. An appreciation of the extent of the fortifications of Vicksburg and the results of the first Union attempt to take the city will enable the reader to better understand why the

commanders made the decisions and chose the courses of action that they did in conducting the campaign (see Appendix B).

The fall of New Orleans on April 25, 1862 to Union naval forces added urgency to the recent efforts of the fortification of Vicksburg. The job of beginning the construction of defensive works was assigned to Captain D. B. Harris of the Confederate States Engineers. His first efforts were the laying out and construction of batteries for heavy guns to control river access from south of the city.¹ Looking to defending against attacks from the north, he determined that Vicksburg could best be defended by constructing a barrier of rafts, booms, and pilings supported by land artillery batteries at Hayne's bluff (see Appendix N). It can be seen by examining the map (Appendix A) that the Yazoo River flood plain of swamps and bayous provided a protective belt for Vicksburg until the Yazoo River and the bluffs joined at Hayne's Bluff. Any landing of troops that could hope to successfully reach Vicksburg would have to be there or farther up the Yazoo River. This fortification and natural barrier would also prevent a Union thrust up the Yazoo River to the interior.² The plan layed out by Captain Harris secured Vicksburg from attack from both north and south.

Work was begun on the Mississippi River batteries located below the town and the works at Hayne's bluff by an

allocated force of 1000 negroes. Harris had two assistant engineers, captains John N. and John H. Reid to help him with this undertaking.³ By May 18, 1862 six batteries were completed and ready for action when the first Union fleet appeared to demand a surrender.⁴

On June 20, 1862, Major Samuel H. Lockett, of the Confederate States Engineers, arrived at Vicksburg to report to Brigadier General Martin L. Smith the garrison commander as his Chief Engineer. Major Lockett was a former brevet second lieutenant in the Union Army Corps of Engineers and a West Point Graduate, class of 59.⁵ The appointment of this officer is extremely important as he served as the Chief Engineer for the defense of Vicksburg from the beginning to the surrender on July 4, 1863. He was involved in every aspect of engineer operations of the campaign and fortunately to the researcher, he wrote to some degree of his efforts. In fact, his excellent maps of Vicksburg appear in the Atlas to Accompany the Official Records of the Union and Confederate Armies.⁶ In November 1862, he was appointed as Chief Engineer of the Department of Mississippi and East Louisiana after General Pemberton took command.⁷

Upon Major Lockett's arrival, there had been no Union offensive action against Vicksburg, but the preparations of the river defensive positions were still feverishly in progress. The existing river batteries were being strengthened and new battery positions were being

constructed as new artillery pieces continued to arrived. Lockett participated in laying out several batteries above the city which became know as the "Upper Batteries."⁸

The term batteries has two meanings in this context and explanation is required. In field artillery terminology, battery means one or more guns or artillery pieces positioned to fire. In an engineer construction context, a battery is a constructed position for one or more artillery pieces to operate from.

There were two types of batteries built for the defense of Vicksburg: the barbette battery and the embrasure battery. The barbette battery was a construction in which a parapet was constructed for the guns to fire over. The parapet provided a measure of defense for the gunners and the piece from return fire. The embrasure battery had a firing port in the side of the parapet for the piece to fire through, like a window. Each type of battery had advantages and disadvantages. The barbette battery had a wider field of fire and vision. It was also easier to construct. The embrasure battery provided more protection to the gunners and piece but its field of fire and vision was much more restricted. The embrasure battery was much more difficult to construct. Each type of battery had advantages and disadvantages depending upon the situation and both types were represented at Vicksburg.

In addition to the parapet, the battery consisted of several other elements that added to the complexity of the construction. The battery required a firing platform for the gun to sit on. The platform was generally a wood structure. When the gun was fired, it rolled back from the recoil. The platform was required to be as large as the recoil area that the wheels and trail rolled on and of course was effected by the field of fire that the battery serviced. To fail to construct a wooden platform would result in the surface of the platform being dug up and rendered unserviceable after a few firings or inclement weather. In addition to the platform, a ramp to wheel the gun up onto the platform or extract it, if necessary, was required. In addition to the gun position, the operation of artillery required magazines. Magazines are secure positions for storing the powder for the guns near the gun position. The magazine had to be of a construction sufficient to protect the powder from the effects of enemy counter-battery fire as well as moisture. A bunker like structure was commonly made from fascines and a timber roof with fascines on top. The recommended thickness was three feet of earth. Finally traverses had to be constructed. A traverse is a parapet or berm of earth that provides cover and concealment from the side and rear. Its purpose is to provide a protected path to the magazines for the gun crews.⁹ The amount of work required to construct a battery

varied by such factors as the number and size of guns to be emplaced in an individual battery, the location of the battery, and the nature of the soil that the battery had to be dug into. It is easy to see that constructing batteries was a labor intensive task.

Another activity Major Lockett immediately began, as Chief Engineer, was the making of an accurate map of Vicksburg and the surrounding area. This was an important duty of engineer officers during the Civil War.¹⁰ Armies both North and South were hampered by a lack of maps of value to military operations. Other than coastal maps prepared by the United States Corps of Topographical Engineers in the 1840's, maps of the Interior South were non-existent.¹¹ In order for an army to conduct military operations effectively, it must have an understanding of its area of operations. The engineer and his map making capability was extremely critical to effective operations.

The war began at Vicksburg on June 26, 1862 with the reappearance of Farragut's fleet. On the morning of the June 27, 1862, the bombardment of Vicksburg began by ironclads and mortar boats. On June 28, 1862, elements of Farragut's fleet sailed upstream past the city with guns blazing. The defenses of Vicksburg at this time had 29 guns in battery, two 10-inch Columbiads, and the remainder being 42 and 32 pounders (see Appendix B). The gun duel between Union fleet and land batteries had little physical result.

The ironclads were able to pass the batteries, with little damage, and none of the Confederate guns were taken out by fire. Even though a heavy bombardment was kept up by the mortar boats on the city and batteries, it was ineffective and life became routine after a few days. Brigadier Thomas Williams with a force of 3200 men had accompanied Farragut on transports to assault and seize Vicksburg if necessary. The Confederate forces had 10,000 men available to repel an assault. Considering the strength of the city's defenses, none was attempted.¹²

The attempt to bring about the surrender of Vicksburg failed. The Union forces were too few to assault the city. The ironclads and mortars failed to cause enough damage to force a capitulation. Casualties were minimal to say the least. As a result of days and days of bombardment, casualties were reported by General Smith as 7 killed and 15 wounded.¹³ Finally, realizing Vicksburg would not surrender and the fleet had insufficient manpower to storm the city, the Union fleet withdrew on July 25, 1862.¹⁴

It was during this phase of the Vicksburg Campaign that the first canal was attempted across DeSoto Point, the narrow neck of land opposite Vicksburg, by General Thomas Williams. Williams had been directed by General Benjamin Butler, Commander of the Department of the Gulf, to proceed to Vicksburg, seize the city, and defeat the Confederate force stationed there. In addition,

You will send up a regiment or two at once and cut off the neck of land beyond Vicksburg by means of a trench across, thus' (he included a little sketch indicating the location of the Williams Canal across Desoto Point)' making the cut about 4 feet deep and 5 feet wide. The river itself will do the rest for us. A large supply of spades and shovels have been sent for this purpose.¹⁵

If successful the canal would allow river traffic to bypass the guns at Vicksburg and render the strong Confederate position useless. It was obvious that General Butler had little idea of the enormity of the task.

General Williams soon found out. The plan called for the canal to stretch from six miles up river from Vicksburg to three and a half miles below the city. The canal would be a mile and half long and fifty feet wide (see Appendix C & E).¹⁶ With a force of 1100 to 1200 impressed slaves from neighboring plantations, he began work on the canal on June 27, 1862.¹⁷ The soil at the canal site was composed of hard clay. He reported on July 4th that his force had dug down to a depth of seven feet and had not reached sand. He estimated a further four feet would probably be required to reach sand. General Williams reported to his superior that even with the current in the river as great as it was, if let in it would not erode the clay. He had to reach sand in order to benefit from the river's erosive power.¹⁸ The work on the canal proved to be a major undertaking. By July 11, 1862, the canal had been dug to a depth of thirteen feet, width of 18 feet and was a mile and a half in length. This

had required the work of all of the troops in his command and from 1200 to 1500 slaves. It consisted of pick, shovel, and axe work. The removal of trees, roots and other obstructions was exhausting.¹⁹ On July 17, 1863, Williams reported that the river level was continuing to drop and the work was being hindered by cave-ins of portions of the canal. He estimated that it would take him an additional three months to dig the canal deep enough, at least 35 to 40 deep, to be practical with the labor force he had.²⁰ His comment in a report to General Butler summed it all up. "The labor of making this cut is far greater than estimated by anybody."²¹

The attempt to build a canal across Desoto Point was a failure. The labor required of the troops was heavy. Combine the humid heat of the summer in this region and the insects to the heavy labor and the result was devastating to the troops. Of the 3200 of the troops employed, 800 were fit for duty on July 26, 1862 when the work was abandoned.²² The key failure of this attempt to bypass Vicksburg was perceived to be due to the continued falling of the river level which prevented the canal from reaching a depth sufficient to allow the river to fill and widen it. Even though this attempt failed it wouldn't be the last time a route was sought to bypass the guns of Vicksburg.

It is quite possible that the canal across De Soto Point was an engineering impossibility in any case. In a

report to the Bureau of Topographical Engineers at the War Department dated February 13, 1863, Brigadier General A. A. Humphreys expressed his frustration concerning the enterprise. He felt that certain realities were being overlooked by those attempting to dig the canal. The Mississippi River bed is composed of alternating layers of loam, sand, and clay. The clay is a hard tenacious variety that has a tremendous resistance to erosion. He stated that the river bed is always found to rest on this clay because the current washes away the loam and sand rather quickly. This strata effected the effort to build the canal because to assume that a narrow cut would be washed out by the river's current relies upon the nature of the soil at the canal site. If the strata was mostly loam and sand with some clay, the concept would work. If the strata was a very thick layer of clay, then the concept was bankrupt. General Humphreys feared that these facts were not being considered by those making the decisions and requested assistance by the War Department to be heard. There were simple engineer procedures that could quickly be performed to discover the practicality of the canal if he were allowed assist in the operation.²³ It seems that the canal was a bigger job than conceived and required engineer expertise to manage it.

As soon as the Federal fleet left, work was immediately begun to repair the damage done to the batteries, and to improve the overall defenses. The

Confederate engineers now had some practical experience to base their efforts on. It was also decided at this point to construct defenses on the land side of Vicksburg in case a Union Army was landed. It was obvious Union forces would be back in greater strength. The defenses needed to be strengthened for that eventuality.

As Chief Engineer, it was Major Lockett's responsibility to plan, locate, and lay out the land side line of defense. He spent a month in reconnoitering, surveying, and studying the terrain. "No greater topographical puzzle was ever presented to an engineer."²⁴ The task Major Lockett faced was a difficult one due to the nature of the terrain he had to work with. In his own words,

The series of irregular hills, bluffs, and narrow tortuous ridges, apparently without system or order, that constitute the strong defensive position of Vicksburg, raised some two hundred feet above the level of the river, owe their character, with all their strangely complex arrangement and configuration, to the natural erosive action of water on the fine, homogenous, calcareous silt peculiar to the lias or bluff formation.²⁵

The difficulty of the situation was greatly enhanced by the fact that a large part of the hills and hollows had never been cleared of their virgin forest of magnificent magnolia trees and dense undergrowth of cane.²⁶

Examining the terrain and devising a defensive system obviously required a great deal of time and creative imagination.

Even though the terrain was next to impossible, Lockett was able to determine a line of commanding defensible terrain surrounding the city. At Vicksburg, the Mississippi River runs nearly due south and the streams that enter it from the east run southwest. One such stream enters the river five miles below Vicksburg and the dividing ridge which separates two of its branches runs parallel with the river behind Vicksburg. It was along this winding ridge that the Confederate placed the defensive line. On the north side of Vicksburg, the defensive line was tied to another ridge separating two streams that entered the Mississippi River north of Vicksburg. In essence, the Confederate defensive line began at the north where the bluff strikes the river, followed a steep ridge eastward to where it joined a northeast/southwest ridge mass to the Mississippi River below Vicksburg. The defensive line stayed on high ground with the exception of two places where it crossed the valleys of two small streams.²⁷ Haynes's Bluff on the Yazoo River and Warrenton, about six miles south of Vicksburg on the Mississippi River were fortified as strong points securing the flanks of the defensive line (see Appendix O). The concept of the defense of Vicksburg was complete.

The plan he devised consisted of a series of redoubts, redans, lunettes, and small field works located on key features and commanding points connected by rifle pits

to provide a continuous line of defense around the city.²⁸ The major works were constructed to control and protect the six roads into Vicksburg which constituted the major avenues of approach for an enemy attacking force. (see Appendix B) Fort Hill guarded the River Road to Yazoo City along the Mississippi River at the north end of the defensive line. The Graveyard Road was dominated by what would soon be called the 27th Louisiana Lunette on the north side of the road and the Stockade Redan on the south side of the road. In between these two positions was a long stockade. The Jackson road was covered by the soon to be called 3rd Louisiana Redan on the north side of the road and the Great Redoubt on the south side. The 3rd Louisiana Redan was unusual in that it was the only defensive work not fronted by a ditch. The Great Redoubt was an irregular shaped work that was 100 yards long. The Baldwin's Ferry road was guarded by the soon to be named 2nd Texas Lunette. The railroad line into Vicksburg was covered by the Railroad Redoubt. The Square Fort was south of the Railroad Redoubt and sat on dominating terrain. The Sallient Work commanded the Hall's Ferry Road. Finally, the defensive line was tied in to the river by the South Fort that overlooked the Warrington Road and the swamp between the bluff and the river.²⁹ This defensive line of strong works sitting on the avenues of approach and connected by rifle pits and lesser

works provided a formidable defense to any land based attacker.

The plan was submitted to General Pemberton in the latter part of October 1862 and immediately approved. The defensive line was a staggering eight miles long. General Pemberton, and of course Major Lockett, believed it was the shortest line possible for an adequate defense of Vicksburg, considering the terrain. General Pemberton ordered work on it commenced immediately.³⁰

The entrenchments themselves were well located, usually placed on the dividing ridge line with the slopes of the ridge and deep ravines to the front in many places so steep that it was difficult to ascend.³¹ The sides of the ravines and ridge lines were usually wooded so those in front of the Confederate lines were felled in abatis to form impenetrable entanglements.³² In addition to the abatis, the obstacle system was reinforced in some places with telegraph wire woven among stakes, stockades of logs, and sharpened stakes stuck in the ground and inclined to the front two or three off the ground.³³ Vicksburg was more an entrenched camp rather than a fortification, with its strength gained primarily from its difficult ground reinforced with obstructions and defensive positions designed to slow an attacker sufficiently to maximize defensive fire rendering a successful attack impossible.³⁴

To enhance the readers understanding of the fortification terms, I have prepared and enclosed a glossary of definitions (see Appendix Q) from Dennis Hart Mahan's, A Complete Treatise on Field Fortification, with The General Outlines of the Principles Regulating the Arrangement, Attack, and the Defence of Permanent Works. This is an important reference as it was originally published in 1836 by the renown professor of military and civil engineering at West Point. The engineers in the army during this time, mostly West Point graduates, were trained by this man. He taught mathematics and engineering at the Academy from 1824 to 1826, studied at the School of Application for Engineers and Artillery at Metz, France for four years, and returned to West Point as a professor of civil and military engineering from 1830 until 1871. It is safe to say that even the amateur officers that did not attend the U. S. Military Academy read his works. Certainly no senior commander who fought in the American Civil War was unaware of his theories.³⁵ The treatise was written for the purpose of providing a combat engineer field reference guide for the military officer as well as the military engineer.³⁶ It would not be unreasonable to think that this book influenced the engineers at Vicksburg. Perhaps a copy or two might have found their way into a haversack of one or more participants of the Vicksburg Campaign. The glossary

therefore contains definitions in the context of the period studied.

The magic that the engineer had to perform required the application of theory to the reality of the terrain. An important part of that theory was the integration of the tactical benefit of the fortification's design. The design had to be such that you realized a mutual defense of its many parts. To reach this capability, certain parts of the works are pushed forward as salients. The salient position has the ability to fire down the face of the main line providing flanking fire into the attacker. The main line can fire at the flank of the salient and across the front of the salient so that all elements of the works are mutually supporting. This flanking fire prevents the enemy soldiers from entering the ditch and being under the angle of fire from the parapets above, thereby positioning themselves in a fire free safe area or dead space. The length of the unbroken line of the defensive position must not exceed 160 meters as this was the range of the common weapon. This limitation insures that effective flanking fire was maintained.³⁷ As described above, the terrain was irregular and extreme in the least thereby magnifying the complexity of the task for the engineer. The fact that Vicksburg was not taken by storm is a tribute to the skill of the engineer, Major Lockett and his assistants, in making this connection of theory and terrain work.

The main works consisted primarily of exterior ditches with parapet, banquette for infantry, and embrasures and platforms for artillery.³⁸ The redoubts were generally built on spurs that projected out from the main line. The redoubts had a strong profile, had parapets on two or three sides, were irregular in shape, and generally open in the rear. They were strengthened with dry ditches in their front about six to seven feet deep and from six to ten feet wide. They were connected by light trenches, often referred to as rifle pits, for infantry.³⁹ The type of battery for the artillery, barbette or embrasure, was determined by the ground upon which they were placed. The batteries were located on prominent points where their fire was most effective.⁴⁰

The job of building the defensive system was an immense one. Heavy back breaking labor was required. The defensive ditch was dug with pick and shovel. Axe work was required to remove trees, brush, and roots. The earth or spoil from the ditch was used to form the parapet. The parapet had to be scientifically constructed to incorporate the benefits of the parapet. The superior slope, interior wall, had to be revetted to create a semi-vertical wall to enhance firing of the defenders (see Appendix Q). A banquette had to be built into the wall for the shooters to stand on. The exterior slope was formed by the natural fall of the soil. A berm was placed at the edge of the ditch and

at the base of the exterior slope to prevent the parapet soil from sliding down into the ditch refilling it. In the case of redoubts or other strong points, the structure became more complex with multiple walls, traverses, stockades etc. Batteries were incorporated into the defensive line with all the complexities described above. The defensive line was a major construction.

The engineer work that took place during this phase of the campaign like the rest of the campaign was not conducted by organized engineer units, as we would expect in today's military. In fact, only one formal engineer unit was located in Vicksburg and the surrounding area of operation during this campaign: the Company of Sappers and Miners commanded by Captain D. Wintter. This organization performed much of the expert engineer work required. The bulk of the labor for the preparation of Vicksburg's defenses was provided primarily by slaves, hired freedmen, and work details from garrison units under the supervision of trained engineer officers.⁴¹ Slaves were not as plentiful a resource as one would imagine. They were difficult to obtain because the planters were reluctant to provide them because they needed them on the plantations and feared losing them.⁴² The equipment they had to use was primitive by our current standards. Essentially, the pick, shovel, and axe were the standard tools. These were not plentiful in any case. The army units didn't carry near the required

number and civilian sources didn't have a plentiful supply either. Some civilians went so far as to hide their tools from the army.⁴³ At the most during any part of the Vicksburg Campaign the total of number of implements never exceeded 500. Finally, teams of mules and oxen were used like modern day trucks for hauling earth and materials.⁴⁴ Essentially, what we see is an ad hoc organization of a few trained professionals leading, for the most part untrained laborers, with insufficient equipment performing an enormous construction project successfully.

Ditches, parapets, redoubts, and other obstacles such as abatis used were not expected by themselves to prevent the attacking infantry from entering the friendly trenches. Their purpose was to slow down the attacking infantry to allow the defenders additional time to pour more shots into them making the attack too costly to continue and thereby stopping the attack. A second benefit and equally important was the benefit to the defender of being under cover and not subject to effective counter fire.⁴⁵ This second benefit of the defensive works is not to be passed over lightly. Both armies at this point in the war were for the most part amateur organizations. The protection of entrenchments was considered by many to offset the lack of extensive training that they suffered from. In his treatise mentioned earlier, D.H. Mahan states that putting amateur troops behind fortifications instills confidence that matches the

discipline and training of battle hardened regulars.⁴⁶ In fact, in the preface of this treatise he indicated that the major purpose for writing the treatise was to provide the basis to transmit this benefit to the American Army, an army historically based upon the poorly trained militia.

Engineer operations were a major function of this phase of the Vicksburg Campaign. The Confederate forces' primary activity was the fortification of Vicksburg: eight miles of defensive perimeter consisting of major works and entrenchments behind the city to prevent a successful land attack and thirteen river batteries to control river passage. The Union effort to reroute the mighty Mississippi, that proved unsuccessful, was important in that it was even tried at all. It illustrated a flexibility of mind that even Mother Nature would be challenged to achieve victory. We see this mental flexibility again and again in the study of the Vicksburg Campaign. The fortification of Vicksburg and the Williams Canal were significant achievements considering what was accomplished with the limited engineer assets at hand. Engineer operations were key in this phase of the Vicksburg Campaign and will continue to be so as will be illustrated in the next phase, Operations in the Bayous.

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³³Ibid., 179; Report of MAJ Samuel H. Lockett, 26 Jul 1863, QR, 24 pt 2: 331.

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³⁵Stephen E. Ambrose, "Dennis Hart Mahan-A Profile" Civil War Times Illustrated (November 1963): 31.

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³⁷Ibid, 5-10.

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⁴¹Report of MAJ Samuel H. Lockett, 26 Jul 1863, QR, 24 pt 2: 329-330, 335.

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CHAPTER 3

OPERATIONS IN THE BAYOUS

This phase of the Vicksburg Campaign consists of the attempts of the Union Army to reach dry ground from where it could begin effective land operations to seize Vicksburg. As was described earlier, the guns at Vicksburg controlled river passage. Additionally, the terrain north and west of Vicksburg was a vast impassible swamp. As a result, there were four different operations conducted by the Union Army to get around the guns of Vicksburg to reach dry land south or east of the city. These four attempts depended heavily upon engineer operations. Those four operations which I will explore in this chapter are: (1) the Williams' Canal, (2) the Lake Providence Canal and passage to the Red River, (3) the Yazoo Pass Expedition, and (4) the Steele's Bayou Expedition. All four of these attempts failed, yet they were extremely important to the overall success of the Vicksburg Campaign.

In order to understand why the seizure of Vicksburg from the north was impracticable, we must first look at the Battle of Chickasaw Bayou, an important element of the operations in the bayou. The battle of Chickasaw Bayou was

the only attempt to land north of Vicksburg and seize the city with a ground attack. This battle proved that this course of action was totally impracticable and it resulted in the major efforts discussed in this chapter to find or create a way around Vicksburg by boat in order to reach the southern or eastern side of the city.

On November 2, 1862 the expedition to seize Vicksburg began with a two pronged offensive. The land phase of this operation was the movement of U.S. Grant's forces down the Mississippi Central railroad from Bolivar, Tennessee. This move was designed to threaten Jackson, Mississippi and draw General Pemberton and his forces out of Vicksburg. The amphibious phase was the movement of Major General William T. Sherman's forces down the Mississippi River to attack Vicksburg while General Pemberton moved north out of the city to meet General Grant's advance.¹

General Sherman's amphibious operation left Memphis on December 19, 1862 with 21,000 men. The expedition stopped at Helena, Arkansas on Christmas day to pick up an additional force of 12,000 men. On the December 26, 1862, Sherman sailed up the Yazoo River and disembarked at Johnson's plantation near Chickasaw Bayou.²

The Yazoo River enters the Mississippi River nine miles north of Vicksburg. (see Appendix A) The course of the river roughly parallels the high bluffs that run from Vicksburg northeast to Haynes' Bluff. The Confederates had

batteries and a raft located at Hayne's Bluff where the river and bluffs converge to prevent further movement up the river.(see Appendix N) The terrain between the Yazoo River and the bluffs was low and swampy and had several oxbow lakes spread throughout it. Chickasaw Bayou cut through this land also paralleling the bluffs going from the Yazoo River above Johnson's plantation to the Mississippi River just above Vicksburg.(see Appendix D) The bayou with joining lakes formed a natural barrier. At the top of the bluffs and at their base the Confederate defenders were entrenched in rifle pits and had artillery emplaced. To cross this swampy ground, let alone cross the bayou to assault the Confederate defenses was a very difficult undertaking.

It is not my purpose to describe the battle of Chickasaw Bayou, rather I intend to illustrate that a ground attack from the north was impossible. Further I will comment on the engineer operations conducted there and show that they were key to the battle and indicate how important they will be in the future campaign.

The Confederate defense, as most defenses do, required the exercise of engineer operations. The Confederates integrated the natural obstacles of the terrain into their defense. They placed their defensive line immediately behind a major water obstacle, the Chickasaw Bayou. If the Union forces attacked across this obstacle

they would have to wade through high water, tug through mucky mud, and stumble through tangled vegetation; all the while subject to a hail of cannister, shell, and minnie ball. The Confederates dug rifle pits to place their infantry in to provide them a measure of safety from which to engage the Union attackers. The area was forested along the bayou, so they reinforced this natural obstacle by felling the trees to form abatis to slow down and channelize the attackers. A road was located along the base of the bluffs which allowed the Confederates to move their forces across their front to concentrate if necessary to repel an attack.³ The Confederate defensive position was ideal by reason of natural terrain reinforced by engineer operations.

The Union offensive involved engineer operations as well. The task of the engineer in the offense is to reduce obstacles and promote mobility. One of the first actions of the engineer on the job was route reconnaissance. Lieutenant Pitzman was a engineer officer and Aide-de-Camp to General Sherman. His presence during this phase and later is important because he did record many of his activities which help clarify the duties of an engineer officer during the war in the west and during this campaign. One of his first assignments was to locate the fords across Chickasaw Bayou to facilitate reaching high ground, the objective of the operation. Just before reaching the bayou during his reconnaissance, he encountered a company of the

13th Regiment of Regulars acting as skirmishers. At the time they were engaged with a Confederate force in rifle pits across the bayou. He requested that the Union force cease firing so he could crawl forward and examine the bayou. They acceded to his request and he attempted to crawl forward. The firing by the Confederates was so great, he was unable to reach the bayou. He crawled back and lamented to Captain Jack Schreiner, the company commander of the skirmishers, that he had been unsuccessful. Captain Schreiner asked Lieutenant Pitzman if he had any whiskey on his person. Pitzman did and handed a flask to the Captain. Captain Schreiner yelled to the Confederates that he wished to speak to their commander. When the commander appeared, Schreiner offered him a drink as a courtesy, if the Confederates would hold their fire and allow him to bring it over. The Confederate commander agreed and Schreiner waded through the bayou and gave the flask to the Confederate. Upon Captain Schreiner's return, he was able to advise the engineer that the ford was too deep and miry to be a practicable approach.⁴

Assigned to General Sherman's force was a volunteer engineer unit, The Kentucky Company of Engineers and Mechanics.⁵ During the course of the battle an attempt was made by this unit to bridge the Chickasaw Bayou under fire with elements of a pontoon bridge brought along for just such a purpose. An error occurred as often happens in

campaign, key elements of the bridge, the trestles which are required to connect the pontoons together and lay planking upon, were left behind in Memphis. Captain Patterson, commander of the engineer unit, was confident he could improvise from materials at hand, therefore he attempted to put the bridge in place. The Confederates were quick to realize what the engineers were doing and brought effective fire to bear upon them and thwarted the attempt.⁶ The engineers were never able to bridge the bayou.

A significant amount of mobility operations were required just to operate in this adverse terrain. Due to the swampy nature of the area at Chickasaw Bayou, the road from the landing to the Union camp had to be corduroyed. In Special Order 38 from General Sherman's headquarters, the First and Second divisions were instructed to provide work parties of a regiment each to Captain Jenney, of the engineers, to do the labor. Other units were required to provide officers and 100 man details to make the levee road passible as well as corduroy the nearby boggy areas.⁷ We see again at Chickasaw Bayou as will be illustrated over and over again in studying this campaign, engineer troops performed the specialized functions and the troops of the line were called on to perform manual labor type engineer operations under the supervision of engineer officers.

The battle of Chickasaw Bayou was a Confederate victory and a Union defeat. The reasons are many but do

include the excellent Confederate defensive position tied to key terrain. The avenue of approach for the attacking force was restrictive and virtually impassible. Engineer operations played a key part in both the offense and defense. The Confederates dug defensive positions and tied these defensive positions to major natural obstacles. They enhanced the natural obstacles with man made obstacles such as abatis. The Union forces used engineers to provide mobility through the swamp and attempted to bridge the major obstacle, the Chickasaw Bayou, with a pontoon bridge. This battle, the opening land battle of the Vicksburg Campaign, is a good example of how important engineer operations and engineer expertise would be to the success of this campaign.

It may help the reader understand this phase of the Vicksburg Campaign by remembering that all four of the operations occurred at approximately the same time. The Williams Canal work began January 21, 1863. The Lake Providence effort began on January 30, 1863. The Yazoo Pass Expedition began on February 2, 1863. The Steele's Bayou Expedition began March 14, 1863. The four attempts to bypass were not conducted one at a time. They occurred for the most part simultaneously. This is important to keep in mind because these operations drew upon and competed for limited resources. The limited resources were naval vessels, troop transports, engineer troops, engineer equipment, and trained engineer officers. With these

considerations in mind, I now turn to a discussion of each of the four operations.

The first effort to bypass the guns at Vicksburg was the attempt to complete the Williams Canal across Desoto Point opposite Vicksburg. The original idea was to dig a ditch across the peninsula, open the levees, and allow the rushing water in to enlarge the ditch's channel to enable steamers to sail through thereby bypassing Vicksburg and its batteries.⁸

With the arrival of Major General John A. McClernand and his troops on January 21, 1863, work was begun immediately on the canal with the assignment of 1,000 men from General Arthur's division to the task.⁹ General Grant's correspondence to General McClernand dated a day later reinforced the importance of this project by indicating Grant's desire for the work to begin immediately and his intent to resource the project with several thousand picks and spades as soon as possible.¹⁰ A great effort was made to complete the canal. Not only were troops committed to the construction, but every able bodied negro freedman available was used to work on the canal. General Grant went so far as to send a request to General Hurlbut in Memphis to send as many negro laborers as could be spared from Memphis and other portions of his command to work on the canal.¹¹ By March 1, 1863, over 1000 negroes were working on the canal

under the supervision of General Grant's Chief Engineer, Captain Frederick E. Prime.¹²

Captain Prime, surveyed the canal on January 30, 1863 to determine what actions were required for completion of the project. He identified three problems that needed immediate attention. First, there were three crevasses in the Mississippi River levees that caused flooding of the canal and Union camp sites that needed to be repaired: one at the base of the peninsula just above the entrance of the canal near General McClernand's headquarters, one 2 1/2 miles above the mouth of the Yazoo River, and a third one ten or so miles below the canal. Second, he determined that a new entrance to the canal was needed to fully utilized the force of the river's current in widening the canal once the waters were let in. Third, the canal itself was flooded and in order to deepen it and widen it with pick and shovel, it must be drained. In order to drain the canal, a dam had to be constructed across its opening. Once these initial problems were corrected real work could begin.

Work was started immediately to remedy the situation. Troops were put to work closing the crevasse at McClernand's headquarters. Efforts were begun to dam the entrance of the canal so it could be drained. The dam was constructed from corn-sacks filled with earth and reinforced with a wooden frame. The canal was drained by a steamer steam pump provided by the navy. The draining of the canal allowed

workers to enter the canal and remove stumps and trees and to dig with picks and shovels to widen and deepen the canal to the specified dimensions. As time went on, Captain Prime had to rely more and more on the negroes to work on the canal as fewer troops were available due their being withdrawn to move camps in danger of flooding and to corduroy roads to improve mobility in the area. As the canal was widened and deepened, the earth was used to make a levee along side the canal. This effort was made to prevent an overflow into the Union camps along side the canal should the dam at the head of the canal rupture. The construction of the canal was indeed an enormous task.¹³

On February 15, 1863 the Engineer Regiment of the West arrived to help work on the canal. The arrival of the Engineer Regiment of the West is a significant event. This is the only official engineer unit assigned to General Grant's forces during the entire Vicksburg Campaign. The regiment was formed in July 1861 by J.W. Bissell. He enrolled this regiment with a eligibility limitation that only individuals which were mechanics, artisans, or experienced construction workers could be signed up. An interesting note is that in addition to regular army pay, they would receive professional pay, with mechanics receiving 40 cents extra a day and laborers 25 cents extra.¹⁴ The regiment was made up of eleven companies recruited from Missouri, Illinois, Michigan, and Iowa.¹⁵

The capabilities of this unit were extraordinary. They were provided with every kind of tool necessary to perform any task they were called upon to complete. They built railroad bridges, military roads, fortifications, hospitals, stables, corrals, a saw mill, and also drilled as infantry troops.¹⁶ This was a unique and an extremely valuable organization. Considering that this was a unique and extremely capable asset, its commitment to a specific task indicates an operational priority.

The first task they were employed in was extracting stumps in the canal and enlarging the canal. They worked at this mission until the balance of the regiment was ordered north to Lake Providence for duty under General McPherson on the February 30, 1863.¹⁷ Major Tweeddale and companies H and I stayed at Young's Point to run the dredging machines, which arrived March 1, 1863 until March 16, 1863.¹⁸ With the large number of engineering tasks this campaign required and with only one engineer regiment available, the unit was broken into sub units to provide expertise in several locations.

Captain Prime and the Engineer Regiment of the West weren't the only engineer type organization at the canal. The Official Records mention a Lieutenant Bochbiher's pioneer company present. They were engaged in preparing gablons and facines for the construction of a battery of six guns being constructed by Captain Kossak, another engineer

officer, south of the canal exit to control the river.¹⁹ Major Pitzman, Sherman's topographical officer, spent January and February making a topographical map of the area and of the prominent buildings of Vicksburg. It was during his observations and mapping of Vicksburg that he noticed a great deal of activity around a particular building. This building had a bluish yellow smoke coming from its chimneys. It was concluded that this building was used to manufacture ammunition. Upon reporting his conclusions to General Sherman, he was ordered to take two rifled Parrott guns to the levee opposite Vicksburg and destroy the building, which Major Pitzman did. Later it was determined that indeed the destroyed building was manufacturing ammunition.²⁰

One of the greatest hinderances to work on the canal was the weather. During January and February rain was frequent which routinely prevented effective work on the canal and added more water to an already saturated land.²¹ This hinderance of high water magnified the labor of the army to include creating and maintaining camps. This enormous task wasn't limited to just work on the canal. Just being able to land and set up camp on the river bank required a great deal of energy. The only dry ground was the narrow levees along the river. Near McClelland's headquarters, as described earlier, there existed a crevasse in the levee that allowed water to flood the low areas along the river. Work was necessary to repair the levees to

prevent further flooding. At this time period of heavy rain the Mississippi River level rose and dropped quickly. The conditions were so bad that McClellan retained transports at Young's Point to facilitate evacuation should the river rise and the levee fail. Trafficability was a problem between camps. General Sherman ordered four regiments of General Steele's command to corduroy a two mile section of road across a swamp to remedy this situation.²²

The major weakness of the Williams Canal was its location in relation to the bluffs opposite its exit. The canal was perpendicular to the bluffs. The Confederates controlled these bluffs and set up batteries that enfiladed the canal with a range that reached from the exit up to the railroad.²³ This brings into question whether the canal was practical at all. Even if the canal was completed, the steamers would still be required to sail under the fire of several Confederate batteries, however a great deal less than using the river route.

Any chance of success of completing the Williams' Canal ended on March 7, 1863, when the river rose and broke through the dam at the upper end of the canal and flooded it and the surrounding area behind the Union camps. An effort was made to repair the damage but failed. At this point the canal effort was given up as hopeless.²⁴

The second effort to bypass Vicksburg began on January 30, 1863, the day after General Grant arrived at

Vicksburg. He ordered General McPherson, located at Lake Providence, to begin work on opening a route to the Red River via cutting the levee to create a channel into Lake Providence and clearing a route thru Bayou Baxter, Bayou Macon, the Tensas river, Washita river, and the Red River into the Mississippi river below Vicksburg.(see Appendix G) The three rivers were open and navigable in all seasons. The bayous would be the problem as they were narrow windy and choked with trees and other vegetation. The area between Bayou Baxter and Bayou Macon was a special problem as the bayou turned into a swamp with barely two feet of water in depth. The clearing of the two bayous and the swamp would be enormous undertaking and required a special leader.²⁵ General McPherson was an excellent choice to lead this effort as he was an accomplished engineer, West Point graduate, a past engineering instructor, and early in the war, General Grant's Chief Engineer.²⁶

Generals Grant and McPherson together explored the bayou portion of this route on a small steamer hauled overland from the Mississippi River to Lake Providence on February 4, 1863. General Grant states in his memoirs that at this point he held little belief in success in this route. The route would require a great effort to clear the bayous of obstructions and the length of the route from leaving the Mississippi River to reentering it below Vicksburg was approximately 470 miles through enemy

territory. He stated in his memoirs that he let the work continue to provide work for the troops rather than let them sit idle and to cover for other efforts that held more likelihood of success.²⁷ General Grant's statement appears to be based upon hindsight. I doubt that he would have committed so precious an asset as the Engineer Regiment of the West to just keep the troops exercised. In fact, he was anxious to get around Vicksburg and appeared willing to attempt any reasonable effort that offered success. In any case, a major effort was made to secure this route.

On February 30, 1863, the Engineer Regiment of the West, minus the two companies left to work on Williams' canal, moved up river to Lake Providence to clear Bayou Baxter through to Bayou Macon. On March 5, 1863 the regiment blew a crevasse in the levee to flood Lake Providence and raise the water level in Bayou Baxter and the swamp to facilitate movement into Bayou Macon. They blew the levee by digging a perpendicular hole six to eight feet deep in the levee. They placed a 100 pound barrel of black powder in the hole, tamped it, and set it off. The explosion opened a breach and the water rushed in.²⁸ By March 31, 1863, the route was still not open. By that date, the level of the water in the swamp between bayous Baxter and Bacon was still only 3 1/2 feet for a length of 250 to 300 yards and would require dredging. There were still twelve to fifteen trees to be cut off below the water level.²⁹ The

difficulty of the obstacle presented by the swamp between bayous Baxter and Macon caused General McPherson to look for an alternate route. He went up river before March 2, 1863 to reconnoiter a possible route into Bayou Macon from up river near the Arkansas border at Ashton. He sent Colonel Bissell and elements of his Engineer Regiment of the West up to Ashton to attempt to blow the levee there to raise the water level to enable steamers to enter there. In spite of this new effort, he hadn't given up on the original route as work was continued on Bayou Baxter.³⁰ In spite of all General McPherson's efforts, major obstacles remained in making this route practicable. This route was finally abandoned when the canal thru the swamp proved to be a failure.

The third attempt to bypass the guns at Vicksburg was called the Yazoo Pass Expedition. Five miles below Helena, Arkansas, prior to the war, there existed a steamer route to Yazoo City via Moon Lake, the Coldwater and Tallahatchie Rivers, into the Yazoo River, and down the Yazoo River to Yazoo City (see Appendix F). The route was closed in 1853 with a levee on the Mississippi River to prevent flooding of the rich farmland along the route. It was proposed that a breach could be made in the levee. The route could then be cleared and reopened for passage of steamers. This would allow movement of troop carrying steamers to land the army on high dry ground up the Yazoo River from the guns at

Haynes' Bluff. This would put the Union Army behind Vicksburg and enable it to begin the decisive land operations to seize the city. General Grant sent Lieutenant Colonel James H. Wilson, an engineer officer on his staff, to explore the possibility.³¹

On February 2, 1863, the work to cut the levee was begun by LTC Wilson and 400 men supplied with picks, axes, and shovels from General Gorman's command, of the District of Eastern Arkansas. LTC Wilson's plan called for opening a breach in the levee and allowing the force of the water pouring through the cut to widen it sufficient to allow passage of the vessels involved in the proposed operation. The difference in the water levels from the Mississippi River to the Yazoo Pass was 8 1/2 feet. This opening would also overflow the surrounding land and therefore he judged it would be three days before the water levels would equalize and reduce the current into the pass sufficient to allow safe entrance into the pass.³² By the next evening of Feb 3, 1863, two cuts had been dug in the levee 15 to 20 feet wide at the top and 50 feet apart. After the cuts were prepared, the river was let in by exploding a mine in the mouth of the cuts.³³ The initial opening was five feet wide but the current soon did its job as described by LTC Wilson.

By 11 p.m. the opening was 40 yards wide, and the water pouring through like nothing else I ever saw except Niagara Falls. Logs, trees and great masses

of earth were torn away with the greatest ease.
The work is a perfect success.³⁴

The cut in the levee was widened by the current to 200 feet. It took several days for the flooded area to reach the level of the river and allow passage of boats into the pass. It wasn't until March 7, 1863 that it was safe enough for LTC Wilson to pass into the Yazoo Pass and on into Moon Lake aboard the steamer Henderson.

The task involved more than just blowing a hole in the levee and sailing down to the Yazoo River. The Yazoo Pass had not been used for ten years and the jungle like vegetation of the delta took over. Trees had grown up in the channel and flood debris had choked the pass in the form of rafts. Vines and bushes had grown up around and through these rafts tying them together. The trees bordering the pass were large and heavy branches had grown down low over the pass forming a canopy. Moving the boats through the Yazoo Pass would require a great deal of labor to carve a passage to the Coldwater River.³⁵

On 8 February 8, 1863, LTC Wilson conducted a reconnaissance of the Yazoo Pass in an open boat to a distance of six miles to examine the obstructions. The day before he had been advised by some civilians that the Confederates had discovered the operations he was conducting and were busy obstructing the route. In spite of the Confederate counter mobility efforts the reconnaissance

confirmed his belief that this was a practicable route and returned to camp.

On 9 February 9, 1863, LTC Wilson with three small steamers, two regiments of Infantry equipped with axes, cables and assorted tools entered the pass to begin clearing the route. The description in his report of April 9, 1863 gives a clear idea of the enormity of the endeavor:

On the 10th, after a careful examination of the obstructions and their probable extent, with the steamboats and two regiments of Infantry, under the command of Brigadier-General Washburn, the work of removing the obstructions was begun.

The first barricade was a mile in length, and the second about 2 miles, but not so compactly constructed, though slighter obstructions were found all along the Pass from Pennington's to within a mile of Coldwater. They were formed by felling trees into and across the stream. The forest being very dense, and the growth luxuriant, the trees were of the largest and heaviest kinds, cottonwood, sycamore, oak, elm, and pecan prevailing, and all, except cottonwood, having a greater specific gravity than water. These, mixed with drift-wood, rendered the barricade of no trifling nature, and, under ordinary circumstances, would have required great labor to remove. To add to the difficulties of the work, the rapid rise of the water from the crevasse at the entrance overflowed the entire country, except a very narrow strip of land next the bank, not to exceed in any place 50 yards wide, and frequently not half that. The working parties were kept necessarily on board the boats. There being no way of reaching the lower end of the Pass with troops and the necessary provision and implements, the work had to be done from the upper end and the "blockades" removed successively. After resorting to the use of windlasses and other machinery for removing the fallen trees and drift timber, all attended with the breakage of cables, tackle, and boat machinery, besides being entirely too slow, the plan of cutting off the limbs, sawing in two the logs, and

drawing out such parts as would not sink entirely out of the way was adopted.

In many cases where a footing could be obtained, entire trees, measuring 90 feet in length and 4 feet through the butt, were drawn out by attaching two or three 6-inch cables and hauling upon them with from 250 to 400 men. In this way, by the 21st instant, the entire Pass was cleared, and, with the cutting of an occasional overhanging tree, prepared for navigation.³⁶

LTC Wilson reported that the width of the pass had been widened to about 60 to 80 feet clear and was from 18 to 30 feet deep. The length of the Yazoo Pass from Moon Lake to the Coldwater River was about 15 miles. The Coldwater River from the Yazoo Pass was 100 to 130 feet wide. The Tallahatchee River was 130 to 180 feet wide. From the Yazoo Pass and Coldwater River Junction to the mouth of the Tallahatchee River on the Yazoo River was nearly 200 miles. The route was reported open and navigable.³⁷

On February 24, 1863, the expedition entered the Yazoo Pass. The expedition consisted of the Iron-clads Chillicothe, Baron DE Kalb, two rams, five light draught gunboats, 13 troop transports, and 5000 army troops under the command of Brigadier General Ross.³⁸ The first day the command made only six miles due to the necessity to enlarge the passage. All hands on board the vessels were involved in the heavy labor of sawing and cutting the obstructions out of the way. LTC Wilson directed the operation. The vessels suffered heavy damage due to the dense vegetation. Smoke stacks, boats, and upperworks were all torn away as

the big ironclads squeezed through the narrow passage.³⁹ The speed was actually less than the current of the stream because of the necessity to back up and check with lines in order for the large vessels to make the narrow turns in the stream without smashing into trees and the bank.⁴⁰ On February 28, 1863, after four days of back breaking labor, the flotilla reached the Tallahatchie River, having traveled forty miles from the break in the levee. The Tallahatchie River was smooth sailing until the flotilla reached the junction with the Yazoo River.⁴¹

The Confederate countermobility operations had the desired effect. The natural obstacle of the overgrown Yazoo Pass combined with the countermobility operations of obstructing the route and the inability of the flotilla to move at night had provided the Confederates a sufficient period of time to move forces into place and construct Fort Pemberton.⁴²

On the morning of March 11, 1863, the flotilla advance rounded a bend in the stream and there on an island sat a Confederate fort, Fort Pemberton, with command of the Tallahatchie River. (see map) The Confederates had been busy as described in a report made by Major-General W.W. Loring the commander of Fort Pemberton:

In accordance with your instructions, I left Jackson, Miss., on the morning of February 17 last, with the view to finding some suitable place on the Yazoo or Tallahatchee whereat to erect works and

place obstructions to the passage down of the enemy. An examination of the two rivers from Yazoo City to 100 miles above here satisfied me that this position was the only one offering the slightest advantage for defensive works, and having previously ordered Major [minor] Meriwether, of the engineers, to this place, determined to avail myself of its strong points. Accordingly, a line of works composed of cotton bales and earth was thrown up, extending from the Yazoo to the Tallahatchee, and a raft constructed by the able and united labors of Maj. Thomas Weldon and Mr. John McFarland, and with great skill placed in the Tallahatchee on our right. These necessary arrangements were prosecuted with the utmost diligence day and night; and notwithstanding every exertion to perfect our defenses, the enemy made his descent of the river and found us but poorly prepared to receive him.

On Wednesday (March 11), the enemy made his appearance before us with nine gunboats and twenty-four transports, a land force of 7,000 Infantry and artillery. The raft in an unfinished state was hastily swung across the Tallahatchee, and the Confederate States steamer Star of the West sunk behind it. My Inspector-general, Capt. John D. Myrick, was placed in command of the batteries, and we awaited the assault.⁴³

The Ironclads attacked the fort on both March 11, 1863 and March 13, 1863, but were unable to silence the batteries or approach closer than 800 yards to attempt an amphibious assault. The lead Ironclad, Chillicothe, received heavy damage in both assaults.⁴⁴ The fort boasted quite an array of artillery. Major George U. Mayo, Chief of Ordnance inspected the fort on March 25, 1863 and found the following disposition:

The armament of this force consists of eight guns mounted en barbette behind breastworks of cotton bales covered with earth, as follows:

Commencing on the left, No. 1, banded 32-pounder rifle, en barbette.... No. 2, 8-inch

shell (navy) gun, naval carriage.... No. 3, 12-pounder rifle, on siege carriage.....No. 4, 3-inch (18 -pounder bolt) Whitworth gun, on field carriage,.... Nos. 5 and 6, two 12-pounder rifle guns, siege carriages... No. 7, 3-inch Parrott, and No. 8, 3.67-inch Parrott. Between Nos. 4 and 5 is a brass 6-pounder in battery and on the left (exterior) of the fort are on 6-pounder and one 3-inch rifle on field carriages. The fort is well located for defense against an enemy approaching from up the Tallahatchee, the greatest range being from 900 to 1,000 yards, where the enemy must first show themselves, coming "head-on".There are three magazines, each 8 by 7 feet and 4 1/2 to 5 feet interior height, covered with one tier of cotton, raw-hides, and from 5 to 6 feet of earth.⁴⁵

Fort Pemberton, named after the Confederate commander of Vicksburg, was inaccessible from land due to the flooded nature of the terrain, therefore the army troops were unable to storm and seize it. On the night of March 12, 1863, LTC Wilson supervised the construction of a cotton-bale battery emplacing one 30 pounder rifled Parrott gun obtained from the navy. The materials for the battery were obtained from a local plantation. An additional 30 pounder rifled Parrott gun was added the night of March 13, 1863 and an 8 inch ship howitzer on the March 15, 1863. The fire from the battery, designed to support the naval attack, had a negligible effect due to the long range and angle of fire. The fort was in an excellent position and too strong to be taken by storm.⁴⁵

Because Fort Pemberton was believed to be only a foot above the level of the river, an attempt was made to flood it. A second cut in the Mississippi River levee was made 18

miles above Helena, Arkansas to try and raise the level of the Coldwater and Tallahatchie Rivers. LTC Wilson believed a rise of two feet was possible. The attempt was made but failed to produce any noticable result.⁴⁷

The Yazoo Pass Expedition failed. The countermobility operations of the Confederates coupled with the natural obstacles delayed the flotilla from February 2, 1863 until March 11, 1863. This length of time permitted the Confederate forces to construct Fort Pemberton. Fort Pemberton was too strong to storm by water and unassailable by land. The Yazoo Pass expedition was abandoned.

The fourth attempt to reach high ground is referred to as the Steele's Bayou Expedition. Steele's Bayou emptied into the Yazoo River between Hayne's Bluff and the mouth of the Yazoo River. It was possible to reach the Yazoo River above Hayne's Bluff and below Ft. Pemberton by traveling a route from the mouth of Steele's Bayou and thru Black Bayou, Deer Creek, Rolling Fork, the Big Sunflower River and into the Yazoo River ten miles above Hayne's Bluff. (see Appendix H) Even though this was possible, the route wasn't ideal. The bayous were narrow, very tortuous, and were lined with heavy growths of timber much like the Yazoo Pass. The only advantage was that the bayous were deep due to the general flooding in the area. General Grant and Admiral Porter personally explored the route as far as Deer Creek on March 14, 1863 and deemed it navigable.⁴⁸ General Sherman's

Engineer officer, Lieutenant Pitzman took several days to explore the route with a tug armed with a howitzer and ten sharpshooters.⁴⁹ The route was deemed practicable and a decision was made to attempt it.

The plan was to conduct a reconnaissance in force to determine if the route was practicable and to pull pressure off of the Yazoo Pass expedition. Admiral Porter was to proceed thru the route with a flotilla of ironclads in conjunction with army troops under the command of General Sherman. Sherman's troops were to physically clear the bayous to allow passage of transports if the decision was made to move the army behind Vicksburg via this route. In addition General Sherman was directed to occupy critical points along the route.⁵⁰

On March 15, 1863, Admiral Porter entered Steele's Bayou with a flotilla of five ironclad gunboats: Cincinnati, Louisville, Carondelet, Mound City, and Pittsburg; four mortar boats and four tugs. Gaining entrance to the bayou was an example of what they could expect in this enterprise. The entrance was difficult to find and had to be opened by cutting away overhanging bushes and tree branches with axes and cutlasses to create a pass wide enough for the ironclads to pass in single file into the bayou. Once in the bayou, the channel was wide for the next ten miles and the flotilla made good progress. Depth was not a problem as the high level of the Mississippi River had flooded the surrounding

area to a depth of 17 feet. As the flotilla proceeded upstream, occasionally a tree would appear mid channel, some as thick as three feet in diameter, but the mighty Cincinnati would run full force into them and push them over. Follow on vessels were detailed to haul the toppled giants out of the channel. Progress was good until the flotilla reached Black Bayou. They had to traverse a four mile section of Black Bayou in order to reach Deer Creek. Here the clear sailing ended. The gunboats were too wide to pass through the trees that lined Black Bayou. They had to use the Cincinnati technique of pushing the trees over and pulling them out of the way to create a gap wide enough to pass. A great deal of work was done with saws and axes by the crews to help clear the way. It took twenty-four hours of continuous work to bull through the four miles of Black Bayou.⁵¹

It was where Black Bayou joined Deer Creek that General Sherman and a portion of his troops arrived to join the flotilla on March 17. They were embarked upon the small stern-wheel steamers, Diligent and Silver Wave. The troops consisted of the 8th Missouri and fifty pioneers from Sherman's Pioneer Corps, commanded by CPT Cossack, an engineer officer. The pioneers were equipped with saws, axes, and other necessary tools to accomplish clearing the route. The mission of Sherman's troops on board the steamers was to clear Black Bayou as they followed the

flotilla to allow the passage of an army if the route was found practical. General Sherman and Admiral Porter conferred and in accordance with General Grant's orders, General Sherman's pioneers and other troops were distributed along Black Bayou to clear its course while the flotilla pushed on. The stern-wheel steamers, upon disembarking the troops, were sent back to Steele's Bayou for the troops marching overland from Eagle Bend. Soon a further force of pioneers, negroes laborers, and two companies of The Engineer Regiment of the West joined the first group in clearing Black Bayou.⁵²

A portion of Sherman's force was landed at Eagle Bend on the Mississippi River with the intent of marching a mile overland to the east to a point on Steele's Bayou where they would be picked up by steamers to reinforce the expedition. In order to cross this mile of delta terrain the 47th Ohio Volunteer Infantry with the assistance of 116th Illinois Volunteer Infantry had to construct two bridges over two crevasses in the levee on Muddy Bayou. Work began at 10 a.m. on March 18, 1863 and work was completed on both bridges by noon the next day when two brigades began their march to Steele's Bayou. The next task for the 47th Ohio was the building of an artillery road from Muddy Bayou to Steele's Bayou. They were assisted by the 30th Ohio Volunteer Infantry and a pioneer corps commanded by Lieutenant Samuel W. Ashmead. The road construction was

begun on the morning of March 20, 1863 and completed on the morning of March 23, 1863.⁵³

From Black Bayou, Porter's flotilla passed into Deer Creek on March 18, 1863. Progress continued to be slow due to the narrowness of the channel and heavy overhanging branches. Willow trees, flood debris, and rafts clogged the channel. The gunboats plowed their way through the overhanging branches suffering similar damage as had been experienced on the Yazoo Pass; boats, smoke stacks, and upper structure broken away. Progress slowed to one half mile per hour. Added to the noise and confusion of labor was the smoke of fires burning. The Confederates, discovering the flotilla's presence, were busy going from plantation to plantation setting afire cotton bales and other resources they thought the Union forces came to seize. Admiral Porter described it as a "Moscow affair".

As it was obvious that the flotilla was discovered, Porter hurried to get into the Rolling Fork and beyond to the Sunflower before the Confederates were able to mount a Fort Pemberton type response. At dark, the flotilla stopped due to lack of light and to allow the worn out troops time to rest. Not long after dark the sound of chopping and trees falling was heard in the forest ahead of the flotilla. It didn't take long to figure out that the Confederates were putting obstacles in front of the flotilla. Armed parties were put ashore and a tug mounting a howitzer were sent up

the creek to prevent further Confederate efforts. The parties discovered two large trees felled across the creek. It took 300 men all night with axes and tackles to clear these two trees out of the way. While the clearing of the obstacle was being performed, the tug went twelve miles up the creek firing at parties of tree choppers to prevent their work. Twenty-five trees were found to have been partially cut. The Confederates had impressed slaves from the plantations along the creek into wood cutting parties to emplace obstacles to slow or stop the flotilla. Now it was a race against time for both sides.

After several more days of similar labor in Deer Creek, the fleet approached the entrance to the Rolling Fork. One last obstacle lay between the flotilla and clear sailing: a bed of willows 600 feet long in the middle of the creek. Cincinnati ran into it with a full head of steam and became stuck. The willows seemed to seize the boat in a fibrous grasp. The crew worked the whole day of March 19, 1863 and a half day the 20th with saws, chisels, and cutlasses trying to cut her free. About mid day March 20, 1863, two steamers full of Confederate troops and artillery landed four miles away on the Rolling Fork. It didn't take long until the Confederate artillery took the stranded gunboats under fire driving the work crews inside. The gunboats were in no position to return fire, as the creek banks being higher than the level of the guns. The Union

force desperately tried to withdraw. Admiral Porter sent a message back to General Sherman requesting he come to his aid. It took all the other boats to pull Cincinnati out of the willow bed. The flotilla began its rearward movement as the night of March 21, 1863 came on in an attempt to evade the Confederates and reach the bulk of Sherman's force which hadn't joined the flotilla yet. Unfortunately, it became too dark to continue and the flotilla had to tie up and wait for first light before it could continue to withdraw. A patrol from the flotilla captured two Confederate officers who told the Union leaders that a force of three thousand men and two batteries had been landed to capture the flotilla.

The flotilla resumed its flight at first light on March 22, 1863, but at approximately 8 a.m. it was surrounded by Confederate troops that poured a steady fire upon the boats, preventing anyone from showing themselves on deck. The flotilla returned fire with the mortar boats and howitzers keeping the Confederates at bay. The fleet came to a stand still when they encountered eight to ten trees felled across the bayou. 500 men were put ashore to fight off the Confederates while work parties worked for six hours to remove the trees. It took a great effort using hawsers and tackles to remove the trees. Once removed, the retreat resumed.

During this time, the Confederates reinforced their force with 1000 more men. Again the flotilla ran into an obstacle of two large trees felled across the bayou. When the crews commenced removing them the Confederates advanced to within 50 yards pouring fire into them. The work parties retreated into the boats for a final defense. It was at this critical moment that Sherman's advance force reached the flotilla, driving off the Confederates.⁵⁴ General Sherman, upon receiving Admiral Porter's urgent message, had dispatched 800 men of the 8th Missouri and 116th Illinois under the command of Colonel Giles A. Smith immediately on foot the 21 miles to Porters to his relief. General Sherman followed with two more regiments and another brigade as soon as they arrived. The reinforcements had to march across the mile of land from Eagle Bend on the Mississippi River, board the steamers and proceed up to the place Sherman awaited them. Once the reinforcements joined him, he spared no effort to reach the trapped flotilla. The troops moved by tug and steamer until it became too dark to navigate. They then dismounted and trudged through the swamps by candlelight to reach the flotilla. Porter was in fear of losing his flotilla, but Sherman arrived in time to rescue the naval force.⁵⁵

Like the Yazoo Pass attempt, the Confederates soon realized the Union intentions were to get into the Yazoo River. The response was immediate and efforts continued on

after the flotilla retired, in the event that a second effort was made. Not only were parties sent to fell trees and build fortifications like Fort Pemberton to obstruct the route, but the intent was to also trap and capture the flotilla. Brigadier General Stephen D. Lee was dispatched to a plantation on Deer Creek to obstruct the creek, throw up works, and make a diversion in the enemy's rear. On March 25, 1863, his 3rd Louisiana began constructing log fortifications.⁵⁶ Preparations were made to obstruct the Sunflower and Little Sunflower Rivers. Raft obstructions placed in narrow turns or other chokepoints in the rivers supported by batteries emplaced upon Indian mounds, the only dry ground in the area, were proposed. It is interesting to note that as an enclosure to the correspondence was a suggestion that axes, spades, shovels and other tools be collected from plantations along the way by the proposed work party as there were none to be spared at Vicksburg.⁵⁷ General Lee ordered the preparation of the rafts on the Sunflower as well as on the Rolling Fork. A fortification was prepared on the Rolling Fork constructed of cotton bales with an earthen parapet ten to fifteen feet thick. Further obstructions were prepared on Black Bayou and on Deer Creek between Black Bayou and the Rolling Fork. General Lee reported on April 12, 1863 that the obstructions and the fortifications with its section of howitzers on the Rolling

Fork would retard any enemy effort long enough to bring up reinforcements.⁵⁸

A conference between Sherman and Porter determined the best course of action was to get out of the bayous as soon as possible. The route was determined impractical and the gunboats were backed out of the bayou while troops marched along the bank in support. As much haste as possible was made before the Confederates could seal off their escape with more obstacles.⁵⁹ Thus, the fourth attempt to bypass the guns of Vicksburg ended on March 26, 1863 when Porter's flotilla returned to its old anchorage on the Yazoo River. With the termination of the Steele's Bayou Expedition, the Operations in the Bayous ends.

Admiral Porter summarized the importance of the Bayou Expeditions eloquently:

These persistent attempts of the Army and Navy to overcome all the obstacles in the way of getting into Vicksburg, kept the enemy continually on the alert, and obliged them to be moving through a country filled with all kinds of obstacles, and made them doubtful where the blow would fall. On this account, Pemberton had to reduce his Army in the city, and keep a larger portion of it at points remote from the real objective point at which the Union general aimed.⁶⁰

The four expeditions of the Operations in the Bayous, the Williams' Canal, Lake Providence Expedition, The Yazoo Pass Expedition, and the Steele's Bayou Expedition were innovative attempts to bypass the guns of Vicksburg. Only until General Grant could land his army on high dry ground

could he complete his mission to seize the strategic city. The Operations in the Bayous were significant in that these attempts allowed General Grant to continue to take positive steps in that effort. Each failed to achieve their intended purpose. Yet they were successful in several ways. The troops weren't just lying about waiting for summer and lowering of the water levels. They were busy working in constructive labor aimed at achieving the mission. The labor was hard and it toughened them for the rigors of the campaign of maneuver ahead. The Union efforts caused the Confederates to react and disperse their forces to meet these forays and expend valuable resources that weren't easily replaceable. Finally, the operations and minor clashes of arms were good training vehicles for the leaders and troops of both armies.

In the engineer context of this study, the operations in the bayous were significant for the vast amount of engineer operations conducted. Efforts were made to conquer the Mississippi River and its tributaries and bend them to meet the needs of both armies. The Williams Canal was an effort to reroute the river and bypass a major obstacle to gain mobility. The Lake Providence Expedition was an effort to overcome the terrain to provide mobility to the army. The Confederate countermobility efforts succeeded in thwarting the Union mobility operations in the Yazoo Pass and Steele's Bayou expeditions. We see the use of hasty

field fortifications at Fort Pemberton and on the Coldwater River. We see engineers, pioneers, and common infantry troops supervised by engineer officers heavily involved in the operations. Finally, we see the importance of the trained engineer officers. They conducted reconnaissances, advised commanders on terrain, and supervised the four operations. The engineers role in the Bayou Campaign was crucial. In fact, I believe it is not an overestimation that the operations could not have been attempted without their expertise.

The experience gained in the operations in the bayous made the success in the Campaign of Maneuver described in the next chapter possible.

END NOTES

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CHAPTER 4

THE CAMPAIGN OF MANEUVER

With the abandonment of the four water attempts to bypass Vicksburg described in chapter three, General Grant started looking at moving his army down the west bank of the Mississippi River. The terrain along the west bank was typical of the flood plain swamps his army and the navy had been flailing around in since January. The land was criss-crossed with bayous, filled with swamps, and the bottom farm land flooded. The only dry land was the levees that bordered the bayous. General Grant was interested in the bayous on the west side of the Mississippi River that originated at Milliken's Bend and Young's Point. These bayous were cut off from the Mississippi River by the river levee, but they did drain off the rainfall and flood waters south to the Mississippi River below New Carthage, some twenty-five or thirty miles above Grand Gulf. He believed it might be possible to open a channel through these interconnecting bayous for barges and tugs to ferry supplies, troops, and artillery below Vicksburg. Another important aspect of this idea was the existence of a reasonably good road in back of the levees. The road, once

the flood waters receded and the land dried, could become the primary means to move troops, artillery, and wagon trains of supplies south of Vicksburg. He reasoned once the army moved south of Vicksburg, he could effect a river crossing to high ground on the east side of the river from which to operate against Vicksburg. With no other recourse left, he developed a plan.

To better visualize General Grant's plan, examine the map of the western side of the Mississippi River from Milliken's Bend to Hardtimes at Appendix A. The plan called for digging a canal from Duckport to Walnut Bayou, (see Appendix I) clearing the trees and undergrowth from Walnut Bayou to Roundaway Bayou, and letting the river in to create a continuous water route for tugs and transports down to New Carthage. The road that followed the series of bayous would be improved to move the army and provide lines of communication. General Grant was confident that even if the river was opened into the new canal and the connecting bayous, the increase flooding would be minimal in addition to the existing flood problem. Just in case, he detailed construction efforts to improve the road and raise its level sufficiently to eliminate any possible negative effect the flooding would have on it.¹ With this route complete, he could finally bypass the guns at Vicksburg.

A critical part of this plan was the cooperation of the navy under Admiral Porter. In order to cross the river

once the troops were moved south of Vicksburg, naval vessels would be needed to ferry the troops across the wide Mississippi River. Gunboats would also be necessary to protect the river crossing. The problem was that the transports and gunboats were up river from the proposed crossing sites and the guns of Vicksburg were in between and controlled the river.² Admiral Porter's fleet would have to run by the guns at Vicksburg in order to provide the necessary naval support to effect a river crossing of the magnitude planned. This was a serious risk because once the fleet dropped down below Vicksburg, it could not possibly pass back up river. Sailing upstream would prolong the vessels to fire from the guns at Vicksburg and probably result in their destruction. With the understanding between Grant and Porter that once the fleet passed down river it stayed down river, Admiral Porter fully supported the plan.³

The practicality of the land route down the west bank of the Mississippi River was somewhat questionable. It had potential difficulties as described by Lieutenant, later Major General, Peter C. Hains, an engineer officer on the scene:

The whole country was inundated by the high water in the Mississippi River which had come through the cuts in the levees made by the enemy. There were numerous bayous to cross which could only be crossed by bridges, which bridges had to be constructed by our own soldiers with timber growing in the swamps. The few pontoons we had, belonging to a short section of a pontoon train, had been

Impressed into the service of carrying provisions to the advanced part of our army.⁴

The engineers assigned to the Army of the Tennessee contributed a great deal to refining this plan. Examinations of this route to determine if it was practicable were made long before General Grant decided to implement this plan. Beginning on January 31, 1863, Captain John W. Cornyn conducted an extensive five day reconnaissance of Willow and Roundaway Bayous.⁵ Between March 1 and March 9, 1863, Lieutenant Pitzman, General Sherman's staff engineer officer, was detailed to examine the roads and bayous between Milliken's Bend and New Carthage. Later, on April 6, 1863, Lieutenant Pitzman was sent to assist Captain Prime, Grant's Chief Engineer, in examining and planning operations to improve these same roads.⁶ On April 17, 1863, Captain Andrew Hickenlooper, Chief Engineer for the Seventeenth Army Corps, surveyed the road from Milliken's Bend to Richmond.⁷ The efforts of these and other engineer staff officers were instrumental in making this gutsy plan work.

Engineer troops were in short supply for such a massive engineer operation. Four companies of the Engineer Regiment of the West, The Kentucky Company of Engineers and Mechanics, and the various pioneer corps of the divisions were the only engineer or pseudo engineer units available. As in all the other engineer operations conducted in this

campaign, line troops supervised by engineer officers made up the difference. The specialized engineer troops built most of the bridges, cleared trees and stumps from the bayous, and built flatboats to move supplies. The line troops and pioneers dug the canal, corduroyed the roads, and performed other general labor work in support of the engineer troops. Considering the scarcity of engineer units and the enormity of the mission, their accomplishments were considerable.

Ground was broken on the Duckport Canal on March 31, 1863. Line troops were employed in the actual digging of the Duckport Canal. In a report from C. A. Dana to Secretary of War Stanton, he reported that the engineer in charge of the canal, Colonel G. G. Pride, had 3,500 men working on the canal.⁸ In a letter to his brother dated April 10, 1863, Private Issac Jackson described what digging the canal was like for the 83rd Ohio Volunteer Infantry Regiment:

Our regiment is out here digging a canal from the river to Walnut Bayou which is about 1 1/2 miles. We have a fine time while out here. We don't have to work very hard, the regiment is divided into two reliefs and work only one hour each, and only 6 or 8 hours a day. And we have a very pleasant place to come while out here, along side the bayou on the gently sloping bank which is nice and grassy. We have plenty of rafts which we ride on and, then, the bayou is one of the prettiest places to swim in the world.....

It gets pretty hot during the day and not a shade tree to be got at, for all the woods are filled with water and we can not get to it.⁹

By April 13, 1863, the line troops had dug the canal to a depth of seven feet with picks and shovels. This depth was sufficient to let in the river by opening the levee. Thereafter the work to widen and deepen the canal was accomplished by three dredges that were immediately moved into place.¹⁰

The bayous were characteristic of the ones experienced in the efforts described in chapter three. They were choked with timber and vegetation which required clearing before they were navigable.¹¹ "I" company of the Engineer Regiment of the West was detailed to work on clearing Roundaway Bayou. Major Tweeddale supervising three pioneer companies and companies A, D, and F of the Engineer Regiment of the West worked on clearing Walnut Bayou from Cooper's plantation, where the canal enters Walnut Bayou, to Richmond. This portion of Walnut Bayou had a large concentration of brush and many large trees in the channel. The engineers and pioneers used barges 100 to 120 feet long and saws that could cut to a dept of six feet under water to remove stumps and other obstructions.¹² Captain Jenney described the system of sawing trees in the bayous:

We made saw-frames in the shape of the letter A with a crosscut saw across the bottom, and hung them to the trees to be cut, by a pin at the apex.

The saws were put in position by ropes worked by men on rafts. We soon found, however, that our work was rendered especially dangerous by an enemy that did not carry rebel guns. Poisonous snakes were very numerous at that season of the year in that region, and frequently hung from the trees which stretched their branches across the water. A slight tap on the branch and the snake would fall, so that, in order to keep them out of our boats and rafts, we were obliged whenever we moved to station men forward with long poles to clear the track from snakes. With our force we cut off at a point six feet under the water about seven hundred trees per day, but the trees were in great numbers and our progress was slow.¹³

From April 18, 1863 to May 4, 1863, the level of the Mississippi River dropped to such an extent that the corresponding water level in the canal was too shallow to float any type craft. In fact, two dredges were stranded in the canal and twenty plus barges were stranded in Walnut Bayou. An effort was made by the four companies of the Engineer Regiment of the West and the 127th Illinois Infantry Regiment to dam Roundaway Bayou below Richmond to prevent the loss of any further water from the Bayou between Richmond and Milliken's Bend. The effort was an attempt to retain that portion of the water route. The attempt failed.¹⁴ The river level never rose again and in the final analysis, only one small steamer and a small number of barges traversed the route before the Mississippi River level dropped. The route between Milliken's Bend and New Carthage was impassable. On the positive side, with the lowering of the waters, the roads dried and became passable making further effort on the water route unnecessary.¹⁵

Efforts to make the land route south from Milliken's Bend down along the west bank of the Mississippi River practicable began with the movement of General McClernand's Corps' on March 29, 1863. These efforts continued until the Union Army closed on Vicksburg from the east and seized Haynes' Bluff. With the seizure of Haynes Bluff, new lines of communication were drawn from Milliken's Bend to Grant's army via the Yazoo River. The construction of these new lines of communication will be discussed in chapter 5.

General McClernand's Thirteenth Corps began the execution of General Grant's offensive plan by starting the march south on March 29, 1863. The Thirteenth Corps' advance element was composed of the 69th Indiana Infantry, a section of artillery, and a detachment of the 2nd Illinois Cavalry. They followed a road from Milliken's Bend to Richmond. Their first assignment was to seize the town of Richmond. Upon arriving at Roundaway Bayou, opposite Richmond, the artillery and Infantry provided a base of fire while dismounted cavalry conducted a river crossing operation under fire in small pontoon boats brought along on wagons for just such a purpose. The attack was successful. The night of April 3, 1863, a 200 foot long bridge, made from logs obtained from nearby houses, was thrown across Roundaway Bayou by CPT Patterson's Kentucky Company of Engineers and Mechanics. This bridge allowed the rest of

General Osterhaus' division to cross over the bayou and begin repairing the road south to New Carthage.¹⁶

The task of making this road practicable was a heavy one. Due to extensive flooding and heavy rains the old roads needed repair. In some cases, entire new sections of road had to be constructed. Flatboats for movement of supplies in conjunction with troop movements down the bayou were built. The levee required continual maintenance to prevent further flooding. Finally, raiding Confederate cavalry supported by infantry intent on impeding Union efforts added the requirement of security operations. Still the work was accomplished.

As the Seventeenth Army Corps moved south, continued improvements and route maintenance was required on the road to their rear. From April 19, 1863 thru April 24, 1863, Captain Hickenlooper supervised four regiments of infantry in the corduroying of the road from Milliken's Bend to Richmond.

The road-bed mentioned above was thrown up 20 feet wide and 1 foot high, covered with rails taken from adjoining fences, upon which was then thrown 3 inches of earth; ditches upon each side 3 by 3 1/2 feet.¹⁷

Companies A, D, and F of the Engineer Regiment of the West were directed by Captain Prime to construct a drain on the road near Richmond to draw off flood waters so the road could dry up.¹⁸ Squads of engineers and pioneers were

station at bridges and other trouble spots along the route to effect repairs as they occurred.¹⁹ Continued maintenance on the muddy mirey roads and bridges constantly traversed by troops, artillery, and wagons was essential to keep the army moving and General Grant's lines of communication open.

From Richmond, McClelland's Corps continued the advance down along Roundaway Bayou to Smith's plantation. When McClelland's forward elements reach Smith's plantation they discovered that the levee from Smith's plantation to New Carthage was broken in several places which left New Carthage a virtual island. Ferrying an army from the levee to New Carthage would be too time consuming, therefore another location had to be selected for joining the fleet with the army.

Perkin's plantation, farther south, was selected and a route from Smith's plantation that followed Bayou Vidal to Perkins' plantation was required. On April 24, 1863, General Grant directed LTC Wilson to inspect the road along Vidal, Negro, and Brushy Bayous from Smith's plantation to Perkins' plantation to determine if the route was practicable. LTC Wilson discovered breaks in the levee road and recommended bridges be constructed over Vidal Bayou between Gilbert and Negro and between Negro and Mound Bayous.²⁰ The 12th Division of General Hovey's command was given the task. In four days, Captain Patterson's Kentucky Company of Engineers and Mechanics, the Thirty-fourth

Indiana, and the Twelfth Division pioneers constructed four bridges and cut two miles of road through woods to open the road. (see Appendix J) The work required many hours of heavy work, neck deep in water, and other rigorous duties.²¹ A description of the bridges is contained in a report by Assistant Engineer H. A. Ulffers:

The Bridge over Bayou Vidal is formed of a large flat [flat boat], 100 feet long and 24 feet wide, anchored across the main channel of the bayou by a cable and chain on the southern end and braced against a tree on the northern. Ties of timber, trimmed to 6 or 8 inches thickness, are laid over the gunwales, upon which rest 8 or 12 string pieces, supporting the planks. The next span toward either shore rests on a 12 by 12 timber, notched half into trees on either side, pinned and secured by chains. There are three more spans toward both shores, resting on trestles, each formed of four uprights, 8 inches square, secured at top and bottom to squared logs. The roadway is confined by heavy beams, pinned to the planks and string-pieces, and on the north end a wooden railway has been formed, which is, however, too smooth on the ascent to be of any advantage.

The bridge is 362 feet long, 240 feet resting on trestles and immovable, the balance afloat....

The bridge across Negro Bayou is 550 feet long, curved upstream and rests on sixteen flats [flat boats], mostly new, from 25 to 40 feet long and 12 feet wide, with landings on trestles on either side. The boats are anchored to a 2 1/2 inch line, stretched from shore to shore, and supported in the center by a tree.....

Another bridge, 150 feet long, has been constructed across a slough between the two bayous.²²

The route south had at this point grown to nearly forty miles.

Considering the distance from Perkins' plantation to Grand Gulf and the lack of sufficient river transport, General Grant decided to march the army farther down river to Hardtimes. This shorter river distance would allow him to shuttle troops directly across the river and shorten the distance for each trip, thereby increasing the rate he could ferry troops across the river. The failure of the naval assault and amphibious landing to seize Grand Gulf caused yet another change in plan. A new location had to be found down river from Grand Gulf to gain the east bank. Bruinsburg was finally selected by General Grant. This required further marching for the army from Hardtimes down to Deshohn's Landing. The end result of all the changes was the increase in the marching distance for the army to approximately sixty-three miles.²³

The road from Perkins to Hardtimes along Lake St. Joseph was no better than any of the rest. Three more bridges were required to make the road practicable. Lieutenant Tunica, engineer from the 9th Division, accompanied an expedition under the command of Colonel Kelgwin to explore the road. On this expedition, he supervised line troops in the construction of four bridges in varying lengths from 80 to 120 feet over Holt's, Durasset's, Phelps', and Clark's bayous.

These bridges were made of timber taken from barns in the immediate vicinity of the respective places.

Large, dry beams, 50 feet long by 18 inches square, properly connected, were used to bear the flooring, which was also obtained from the sideboarding of the barns. The flooring was again kept in place by so-called stretchers (pieces of timber 6 inches square). When the banks of the streams were too steep, I had them partly excavated and partly filled with rails, of which there was an abundance.²⁴

With the last segment of the route complete, all of McClernand's Corps was at Hardtimes by April 27, 1863 and McPherson's Corps was in route.²⁵

The net effect of this course of action was significant in an engineer context. General Grant's army had to improve and maintain sixty-three miles of roadway. The roads were in miserable condition and required major construction before they could be used. As more and more troops used the route, it broke down and needed continued repair. Pioneer corps of passing divisions as well as troops stationed along the route were constantly busy repairing bridges, corduroying roads, constructing bypasses of road sections too broken down to repair, repairing drains to maintain drainage, and other activities to maintain movement along the route.²⁶ The difficulty of movement along this route can't be underestimated. Moving artillery and supply wagons required strenuous effort. General McPherson reported that the route he traveled between Smith's and Perkins' plantations required double teaming of artillery and wagons in order to get through.²⁷ Eight bridges between eighty and 550 feet long had to be

constructed from materials at hand by line troops supervised by engineer officers and one engineer company, the Kentucky Company of Engineers and Mechanics. Keeping the road open was a critical element in Grant's operation. He needed it to move troops, artillery, and whatever supplies he could transport.²⁸ Mobility operations in an engineer context were the key element to the success of this Campaign of Maneuver.

Materials used to perform the engineering functions described were limited to those found at hand. If you examine the map at Appendix A, you see numerous plantations along the route. The plantations were a great source of building material. Houses, barns, fences, and other structures provided timber. Plantations were villages in their own right. Tools, ropes, chains, slaves, work animals, etc. were present and were used by the Union army. Plantations had saw mills and other shop type capabilities that were beneficial to the engineers in road construction and maintenance.²⁹

Even though it wasn't an engineer function to guard the route from Milliken's Bend to Hardtimes, ordering troops to guard this vital route indicates the importance of the engineer's work. Troops were stationed all along the route to prevent enemy interdiction of this vital line of communication.³⁰ Special Order No. 110 issued by General Grant's headquarters directed each corps to provide two

regiments each to guard the lines of communication from Richmond to New Carthage.³¹

It is important to remember that the route from Young's Point to Grant's army via Richmond, Smith's plantation, Hardtimes, and across the Mississippi River to Bruinsburg was a very long route for troops to march as well as wagon trains to transport supplies. Sixty-three miles to be exact. Until the Union army reached Vicksburg, General Grant wanted to shorten this route, his only line of communication, as soon as possible.:

What I have wished to impress upon the generals remaining on the Louisiana side of the Mississippi is, that the wagon road from Milliken's Bend to Perkins's plantation should be shortened by every possible means, and that, when circumstances will admit of it, it shall run from Young's Point to a point below Warrenton. Meanwhile all possible exertion should be made to keep the army supplied by the present route.³²

The intent was to make Grand Gulf a base of supply and transfer point from the west bank to the east bank. A road was constructed across the peninsula from Young's Point to a point opposite Warrenton. Captain William L. B. Jenney, an engineer officer in the Fifteenth Corps, was detailed with one regiment of infantry and a small detachment of pioneers to construct that road on May 9, 1863. He was reinforced on May 11, 1863 by Major Tweeddale with three companies of the Engineer Regiment of the West, and an additional pioneer company from the Fifteenth Corps. By 10 a.m. on May 12,

1863, the road was sufficiently complete to allow wagon use the entire eight mile length. The area on which the road was constructed was so swampy that the entire eight miles had to be either bridged or corduroyed.³³ As early as May 15, 1863, troops were marched from Young's Point across the peninsula opposite Vicksburg to a spot across from Warrenton where they boarded river transports that took them to Grand Gulf. This achievement can't be underestimated. General Grants lines of communication from Young's Point to Grand Gulf had been shortened from sixty-three miles of difficult roadway to eight short miles. This also had the added benefit of releasing the troops stationed along the circuitous route to duties on the east side of the river.³⁴

Early on April 30, 1863, McClellan's Corps and one division of McPherson's Corps boarded transports and gunboats and crossed the Mississippi River. They landed on the east bank below Vicksburg at Bruinsburgh. Expecting the garrison of Grand Gulf to march to oppose the invading force, the Union army needed to move inland to reach the high ground two miles distant. The landing site had the advantage of having Bayou Pierre just north of it. This deep bayou provided a barrier to any force approaching from the north. In this case, it was an advantage for the Union Army. It made the nearest bridge at Port Gibson critical for both sides. A race was made by the Union forces to capture it intact.³⁵

While the Union forces were moving down the west bank of the Mississippi River, the Confederate forces were not idle. Countermobility efforts were made to prevent the Union effort from being successful on both sides of the river. Confederate engineers were heavily involved in this effort. Bridges were burned and fords were obstructed to deny Union passage. Entrenchments were constructed and troops stationed at these locations to thwart Union efforts at rebuilding or clearing the obstacles. Excellent examples of these activities are found by examining the efforts along the Lake St. Charles road. Bridge after bridge was burned by the Confederates as Union troops approached. Colonel Kelgwin reported he had to drive off the Confederates before he could rebuild the ruined structures. The burning of the Bayou Pierre structures are another example. Countermobility operations were extensively used in an event to hinder Union intentions.³⁶

The Confederate forces got to the South Fork of Bayou Pierre bridge before the Union forces. The battle of Port Gibson was fought and as the Confederates withdrew across the bayou, they burned the bridges on the main stream, North Fork, and South Fork of Bayou Pierre. This countermobility action caused some delay in the pursuit as no pontoon bridging was available.³⁷ A new raft bridge was hastily constructed 20 yards upstream on the night of May 2, 1863. The bridge was 166 feet long, twelve feet wide and made from

locally obtained materials which consisted of wood from buildings, stables, and fences. The approaches were over quicksand and required corduroying. LTC Wilson planned and supervised the construction. Labor to construct the bridge was provided by Captain Patterson's Kentucky Company of Engineers and Mechanics, the pioneer corps of the 3rd Division, 17th Corps, and a detail from the 78th Ohio Infantry Regiment. Officers and men worked side by side in the fast flowing deep water, completing the bridge overnight.

The suspension bridge over the North Fork of Bayou Pierre was also burned but not totally destroyed. Upon examination by LTC Wilson, he determined only the roadway and a few supports needed replacement. He assigned the Kentucky Company of Engineers and Mechanics and Infantry troops provided by the Thirteenth Corps to the task. The repair was completed during the night of May 3, 1863 and troops were marching across at 5:30 a.m. the next morning.³⁸

Once across Bayou Pierre, General Grant moved to seize Jackson first. This action was intended to cut off any chance of supplies or reinforcements reaching Vicksburg before he turned upon the city and attacked from the east. General Grant also wished to eliminate General Joseph E. Johnston's forces as a threat to his rear once he moved upon Vicksburg. Generals Sherman and McPherson's Corps met the Confederates in their entrenchments around Jackson and

forced a Confederate general retreat without having to conduct an assault. Confederate engineer efforts at entrenching had little effect at Jackson.³⁹

Jackson was supposedly strongly fortified but was not. The Confederates made no serious attempt to hold it and after a brief engagement hurriedly retreated northward toward Canton.⁴⁰

The Union forces were not only concerned with just mobility operations. Countermobility operations were conducted by line units under the supervision of engineers where ever possible. The railroad, to include tracks, ties, and bridges, was destroyed from Jackson to the Big Black River bridge to the greatest extent possible. Captain Hickenlooper assigned as General McPherson's Chief Engineer, a pioneer company, and an infantry regiment conducted these operations from Clinton to Jackson.⁴¹ General Sherman's Fifteenth Army Corps was specifically detailed to destroy the railroads leading to and from Jackson as far out as time permitted before moving on Vicksburg.⁴²

Once the Union forces had crossed the Mississippi River, it was obvious that the bridges and ferries crossing the Big Black River were critical to a Union advance upon Vicksburg. Major Samuel H. Lockett, General Pemberton's Chief Engineer, ordered an engineer officer to each site to establish defensive works to resist passage. In some cases works were not completed due to the rapid retreat of Confederate forces. In particular however, Major Lockett

himself went to the Big Black River bridge to personally layout the defensive construction.(see Appendix K) He directed Captain Wintter and his Company of Sappers and Miners in the construction of the fortifications protecting the railroad bridge. At the same time a steamer was brought up to the bridge site and by swinging it sideways in the stream another bridge was made. By April 15, 1863, the fortifications at the railroad bridge were completed. Another engineer mission of note was the construction of a bridge by the pioneer corps of General Cummings Brigade across Baker Creek to facilitate Confederate movement during the battle of Champion's Hill.⁴³

After the battle of Champion's Hill, General Pemberton withdrew his forces to the Black River Bridge to set up a defense. The position Major Lockett had prepared was a good one. The west bank of the river was high with a steep bank. The east bank was low and flat with fields 400 to 600 yards across cleared for cultivation. A bayou ran through this bottom land. The bayou was bordered with timber which the Confederates had felled into the ditch to form abatis. The bayou itself had two or three feet of water in it. The rifle pits and a parapet had been constructed along the inner bank of the bayou by using cotton bales covered with dirt.⁴⁴ This was a strong position.

Despite the strength of the Confederate defenses, the Union troops assaulted the Confederate position and the Rebel troops fled across the Big Black River bridge. A contingency plan for burning the bridge had been made by Major Lockett. He had loose wood and cotton piled on the bridges as well as a barrel of turpentine on the boat bridge.

At about 9 a.m. our troops on the left were stampeded, and leaving the trenches, came pell mell toward the river. I stationed an officer at each bridge, and after seeing that all our men were across, I gave a signal to apply the torch. In a few moments both bridges were in flames, and were quickly and thoroughly burned.⁴⁵

Fortunately or unfortunately, the burning of the bridge was premature, leaving many troops and guns stranded to be captured. Many of the stranded Confederates tried swimming the river; some made it, others drowned. The destruction of the bridge was a critical move as General Grant states in his memoirs:

But for the successful and complete destruction of the bridge, I have but little doubt that we should have followed the enemy so closely as to prevent his occupying his defenses around Vicksburg.⁴⁶

Three new bridges were ordered to be built immediately. The first was constructed by Lieutenant Hains, Thirteenth Corps Engineer and Captain Patterson's Kentucky Company of Engineers and Mechanics. They constructed a raft bridge out of the unburned timbers of the old railroad

trestle and from lumber from a nearby cotton gin.⁴⁷ The second bridge was constructed by General Quimby's Division, Seventeenth Corps, under the personal supervision of General McPherson. The structure was a pontoon bridge 110 foot long by ten foot wide composed of a timber framework, 47 cotton bales for bouyancy, and boards from a nearby cotton gin for flooring. The third bridge was constructed by General Ransom's Brigade of McArthur's Division, Seventeenth Corps. Trees were felled from the opposite bank of the river. The trees were not completely severed from their stumps and the tree tops were interlaced in the river. Lumber taken from nearby buildings and cotton gins was used to build a roadway across the tangled mass of trees. All three bridges were started after 9 a.m. on May 17, 1863 and were completed with troops crossing by 8 a.m. the next morning. General Sherman crossed his corps at Bridgeport the night of May 17, 1863 on the army's only pontoon bridge.⁴⁸ It is interesting to note that the pontoons in this train were India rubber inflatable pontoons.⁴⁹ Within twenty-four hours the Union Army was across the Big Black River and heading for Vicksburg.

May 19, 1863, Grant's army reached the Confederate fortifications of Vicksburg and the Campaign of Maneuver was over. A lot had been accomplished in a short time. Beginning with General McClernand's advance guard departure from Young's Point on March 29, 1863 to the Union army closing on Vicksburg's fortifications was fifty-two days.

In those fifty-two days a land and water route had been constructed down the west bank of the Mississippi River, a river crossing of 43,000 men had been conducted, the Union army had marched 180 miles, five battles were fought, the state capitol had been captured, and the complete destruction of Vicksburg's lines of communication was effected.⁵⁰ Yet none of these achievements are greater than the feats of engineering that made these accomplishments possible.

I have described in some detail the principal bridges constructed during this campaign of maneuver. There were many others of lesser significance. The official records refer to bridges being constructed at Hankinson's Ferry on the Big Black River, Rocky Springs, Sandy Creek, Baker's Creek, and one at an undisclosed location on the road to Bridgeport. I am sure there were many others.⁵¹

Union engineer officers and organizations were essential to the conduct of this phase of the Vicksburg Campaign. They were vital in the construction of bridging, roads, canals, and clearing bayous to provide mobility for the army's bold strategic maneuver. Engineer officers also provided other valuable services such as reconnaissance of routes and bivouac sites, production of maps of an essentially unmapped countryside, reconnaissance of enemy positions with production of sketches to facilitate planning of offensive operations, and selected sites for artillery

batteries with an eye toward fields of fire.⁵² It is clear that the Campaign of Maneuver could not have been successful without this engineer capability.

One of the more interesting reconnaissances conducted was by LTC Wilson. On April 25, 1863, LTC Wilson, an assistant engineer by the name of Rigby, and one regiment of Infantry was landed on the east bank of the Mississippi River at the mouth of the Big Black River. They conducted a reconnaissance of the the country north from the mouth of the Big Black River Palmyra Island opposite New Carthage. They were looking for practicable roads the army could use to move inland to high ground should it be landed in this vicinity. A rather risky but important venture for so small a force.⁵³

Confederate engineer officers were equally important to the Confederate effort. They were heavily involved in conducting the defense. Major Lockett was everywhere selecting defensive positions and laying out defensive works. The few engineers he had were hard at work supervising the construction of fortifications, bridges, batteries, and obstructions. They also performed reconnaissance for the major unit commanders as the Union engineers did.⁵⁴

Proof of the importance of engineers in this campaign can be found by examining the performance of a division that did not have engineers or pioneers. A report by Brigadier General Abraham Buford is a case in point. Caught across the

Big Black River from Vicksburg, he was compelled to escape and evade Union forces rather than cross and join his army in Vicksburg. Why? Because the Big Black River was an obstacle he could not cross. The results were catastrophic.

Our men were somewhat demoralized, our artillery abandoned, the troops intensely fatigued; we had but a few rounds of ammunition, the greater part of which would be ruined by swimming the river, as we had no means to build a bridge or boat.... Hence our only feasible way of escape and to save the division was to move to the rear of the enemy and pass on his flank in the direction of the Jackson and New Orleans Railroad.⁵⁵

Lack of the mobility to leap across obstacles could spell disaster in this environment as illustrated by General Buford's report.

In summary, this campaign could not have been conducted without engineer capabilities. The army could not have moved south of Vicksburg without eight key bridges that enabled the army to leap over barriers that would have stopped it flat otherwise. The supplies that were critical to sustaining the army once it crossed the river reached the army over these key bridges and others built after the army crossed. Once across the Mississippi River, engineer operations were again critical to cutting Confederate lines of communications, maintaining operational mobility and Union lines of communication, and on closing upon Vicksburg to begin the siege. Of course other battlefield operating systems were critical to the campaign, but it can be safely

asserted that engineer operations were the backbone of this phase of the Vicksburg Campaign.

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CHAPTER 5

THE SIEGE

The final phase of the Vicksburg Campaign began with the Confederate defeat at the Big Black River Bridge. As the defeated Confederate troops streamed back toward the fortifications surrounding Vicksburg, the nature of the campaign changed from one of maneuver to one of siege. The pick and shovel turned out to be just as important as the rifled musket and artillery piece. Again in this phase as in all the other phases of the Vicksburg Campaign, engineer operations were extremely important.

Actions to strengthen the Vicksburg defensive works began well before the battle at the Big Black River Bridge. After laying out the fortifications for the Big Black River Bridge, Major Lockett returned to Vicksburg with Captain Wintter's Company of Sappers and Miners to repair the works at Vicksburg. Fortunately for the Confederates, he left Captain Wintter in charge at Vicksburg and returned to the Big Black River Bridge and supervised the work there until the battle and rout of Confederate forces occurred on May 17, 1863. As stated in the previous chapter, Major Lockett burned the bridges in time to prevent the Union forces from capturing them. Equally important, he secured a written

order immediately after the battle from General Pemberton directing him to return to Vicksburg in all possible haste and to put the defenses of Vicksburg in order. The order further directed all officers of whatever rank to obey all requisitions of the Chief Engineer for men, materials, and labor to carry out his plans. Before nightfall that same day, work was under way all along the defensive line at Vicksburg.¹

The defensive works of Vicksburg, as described in chapter two, consisted of ditches, parapets, batteries, and redoubts. They had not been occupied since their construction, so the rain and weather had eroded them to some degree. In some cases the rifle pits along the defensive line had not been finished. Labor parties were immediately put to work to strengthen the defenses. In addition, all the field artillery and siege pieces were moved from the river to the rear defensive line and batteries were prepared for them. The sea coast guns were left in place guarding the river. As the Confederate Army moved into Vicksburg, all incoming field artillery pieces were added to those already in batteries. By the morning of May 18, 1863, 102 guns were ready for service on the rear defensive line and the defensive line was gaining strength by the hour.²

The defensive line was divided into three districts, each with engineer officers assigned to assist in the

preparation for the defense. General C.L. Stevenson's division extended from the Warrenton Road northward to the railroad. He was supported by Captain P. Robinson, Chief Engineer, who was assisted by Captain J.J. Conway, Captain James Couper, Lieutenant R. R. Southard, and Sergeant W. B. H. Saunders. General John Forney's division occupied the center of the defensive line from the railroad to the Graveyard Road. General M. L. Smith's division was responsible for the line from the Graveyard Road to the river on the north. Both Generals Forney and Smith were supported by Captain D. Wintter, Chief Engineer, with Captain James Hogane, Lieutenant S. McD. Vernon, and Lieutenant Blessing as assistants. The river front was commanded by Colonel Edward Higgins and assisted by Lieutenant William O. Flynn as engineer.³ Major Lockett assigned the few remaining engineer officers so that each division had an engineer officer and each brigade had an assistant engineer to advise commanders and to supervise work details.⁴

Major Lockett, as Chief Engineer, had little in the way of engineer assets to work with. The work force under his direct control consisted of: twenty-six sappers and miners of Captain Wintter's Company, eight detailed mechanics and firemen, four overseers for negroes, seventy-two hired negroes, three four-mule teams, and twenty-five yoke of oxen. Major Lockett's force was small

compared to the engineer force that the Union Army had on hand. As has been the case during other portions of the Vicksburg Campaign, soldiers from line units were detailed to conduct all the work within the limits of their own lines. As far as equipment is concerned, there were approximately 500 picks and shovels total in Vicksburg.⁵ With the limited assets Major Lockett had, it is amazing how much he accomplished.

The utilization of the limited Confederate engineer assets was confined to the specialized tasks that work details of line troops were unable to perform. The engineers conducted general repairs of strengthening parapets and redoubts, constructing batteries, extending rifle pits, and placing obstructions in front of exposed points. The obstructions consisted of abatis, palisades, ditches, and entanglements of pickets and telegraph wire. The engineers were also heavily involved in digging the mines, making thunder barrels, and preparing shells for use as grenades.⁶ The Confederate engineer officers also supervised the work details of line troops. In essence, the engineers troops were tasked to provide the specialized skills as they had throughout the entire campaign, while general labor was performed by details of line troops..

By the morning of May 19, 1863, the Union Army had closed upon Vicksburg. Believing that the Confederate will was shaken after suffering repeditive defeats, General Grant

ordered a general assault upon the works to seize Vicksburg. The Fifteenth Corps made a vigorous assault but was repulsed with heavy losses. The Thirteenth and Seventeenth Corps, out of position and unable to conduct an assault due to their late closure on Vicksburg the night before, did however manage to secure advanced positions. The next two days were spent in preparations for a second assault and in establishing lines of communication.

On May 22, 1863 another general assault was conducted. General Grant risked the second assault because he still felt that the Confederate morale was cracked. He knew that General Johnston was at Canton and receiving reinforcements. He wished to capture Vicksburg quickly and turn upon Johnston before he became stronger. Finally, General Grant states in his memoirs that if an assault was not tried, he believed the troops would not have the zeal for the heavy labor that a siege required if they still thought Vicksburg could be taken by storm. The general attack commenced at 10:00 a.m.

The assault was gallant in the extreme on the part of all the troops, but the enemy's position was too strong, both naturally and artificially, to be taken that way.....⁷

After the failure of the 22d, I determined upon a regular siege. The troops being now fully awake to the necessity of this, worked diligently and cheerfully. The work progressed rapidly and satisfactorily until July 3, when all was about ready for a final assault.⁸

The failure of the second attempt to take Vicksburg gave General Grant the resolve to avoid any more costly attacks. This is made quite clear by his Special Order Number 140 issued three days after the assault:

Corps commanders will immediately commence the work of reducing the enemy by regular approaches. It is desirable that no more loss of life shall be sustained in the reduction of Vicksburg and the capture of the garrison: Every advantage will be taken of the natural inequalities of the ground to gain positions from which to start mines, trenches, or advance batteries. The work will be under the immediate charge of the corps engineers, corps commanders being responsible that the work in their immediate fronts is pushed with all vigor. Capt. F. E. Prime, chief engineer of the department, will have general superintendence of the whole work. He will be obeyed and respected accordingly. By order of Maj. Gen. U. S. Grant:

JNO. A. Rawlins
Assistant Adjutant General⁹

The Union Army set to work preparing for the siege ahead. Ground was cleared for camps and cooking utensils and tents were brought up for the benefit of the troops. The army had been without these since it crossed the Mississippi River.¹⁰ Between May 19, 1863 and May 22, 1863, the lines of communication were shortened and secured. Major Tweeddale's battalion of the Engineer Regiment of the West, Captain Klosterman's pioneer company from the Fifteenth Corps, and the 83rd Indiana were detailed to construct roads from the Yazoo River and across Chickasaw Bayou to the rear of the Union Army. This construction required the use of the Army's pontoon train to assist in

building 300 feet of bridging. Before the end of the siege, the pontoon bridge was ultimately replaced with a permanent structure as the roads constant use rendered at least 50% of the pontoons useless. This road dramatically shortened the lines of communication. Later on June 6, 1863 a second road with an additional bridge 250 feet long was completed to enhance the lines of communication. The resulting reduction in road distance for the wagon trains allowed General Grant to rapidly and easily resupply his army for the siege work ahead.¹¹ The remainder of the Engineer Regiment of the West, 432 officers and men, were operating under Sixteenth Army Corps at Grand Junction.) Once the lines of communication were secure and the creature comforts for the troops were brought up, "All was ready now for the pick and spade."¹²

The terrain around Vicksburg, as described in chapters one and two, was excellent for the defense. The Confederates had set their defensive line along the top of a ridge line that ran from the river north of the city eastward and tied it to another that ran southwest until the line reached the Mississippi River. Deep ravines choked with cane and underbrush radiated out in front of the ridgeline making approach difficult. Redans were strategically placed along the ridge at the head of many of these ravines to control the approach to the main line.

Existing stands of trees were felled to form abatis. The Confederate defensive position was very strong.¹³

The Union Army's task was to create parallel entrenchments opposite the Confederate positions to seal them in and prevent the Confederate Army from breaking out or making limited counterattacks. General Grant estimated that the Confederate line was seven miles long. His corresponding line was more than fifteen miles long, extending from Haynes Bluff to Warrenton. To complicate the Union situation, General Grant had to worry about his rear. General Johnston was still in the Jackson vicinity with his force and General Grant feared Confederate reinforcements from Bragg's army in Tennessee might be added to Johnston's Army. This required placement of additional fortifications and countermobility obstacles in the Union Army rear.¹⁴

There were eight roads, as described earlier, that led into Vicksburg. These roads formed the axis of advance for siege operations and the placement of artillery.¹⁵ There were ten principal approaches constructed to breach the Confederate fortifications. They generally followed the following principal roads that led into Vicksburg: Graveyard road, Jackson Road, Baldwin's Ferry Road, the railroad, and the Warrenton Road. The approaches are most often referred to by the names of the brigade or division commanders that provided the guards and or work parties that constructed them. They were: Thayer's, Ewing's, Giles A. Smith's,

Ransom's, Logan's, A.J. Smith's, Carr's, Hovey's, Lauman's and Herron's Approaches.¹⁶

The siege operations essentially consisted of constructing a line of entrenchments parallel to the Confederate's works from which saps were dug to provide approaches to the Confederate lines in order to reduce the distance for a later assault. Union artillery was placed as far forward as possible to protect the saps, silence Confederate artillery, and blow apart the Confederate defensive works. Once the saps got close to the Confederate lines, many times just a few feet away, their continuation was stopped by the Confederate defenders throwing grenades and artillery shells with lit fuses, or rolling thunder barrels into the saps. Mining then became the preferred Union technique. Mines were dug under the Confederate positions and exploded to try and create breaches or weaken the line. The Confederates countermined to disable the mines, blow up sap rollers, or cave in saps. This general description characterizes the activity all along the line. I will not describe the actions or conditions at every approach. I will later in this chapter, to serve as an example, describe the actions at Logan's Approach because it is well documented and was one of the most important.¹⁷

As stated above, this phase of the Vicksburg Campaign had become one of siege. Its character was similar to what one envisions when one considers the Western Front of World

War I. Troops living underground all day and digging all night. Exposure during the daylight hours courted the sharpshooter's bullet. The Confederates were subjected to heavy bombardments as the Union artillery was used to wreck the Confederate fortifications. The defender was required to constantly repair the crumbling defenses as it was continually bombarded. At the same time the defender tried to prevent the attacker from breaching the defenses by assault, sapping, and mining. Being totally surrounded, another factor was the decreasing food supply which sapped the strength of the defender's physical body as well as the morale.

General Grant realized that due to the siege nature of the current operations, engineer expertise was needed. Captain F. E. Prime, Grant's Chief Engineer, directed the overall engineer operations of the siege. When his health gave out, Captain Cyrus B. Comstock took his place. To supplement what he felt was a woefully inadequate supply of engineers, General Grant directed that all West Point graduate officers assist in supervising the construction of defensive and offense works.¹⁸ The lack of sufficient engineers and engineer troops again made itself felt in this campaign. Officers with other duties were drafted into being engineers and front line combat troops had to learn to be engineer troops. They successfully accomplished this at the expense of time and wasted effort. Many of the

approaches weren't located in the optimum places and some of the construction had to be redone correctly.¹⁹ Still, the work was completed and the operations were successful.

The first priority of labor for the Union Army was to place its artillery and the heavy naval guns obtained from Admiral Porter into batteries that commanded strategic positions of the enemy lines. In addition, camps for the army had to be constructed undercover from Confederate fire. Rifle pits were the next priority followed by covered roads to connect the entire line of Union forces that surrounded Vicksburg.

The Union entrenchments were located as close to the Confederate lines as possible, and in no case were they begun less than 600 yards away. An effective characteristic of the rifle pit construction was the placement of sandbags at the top edge of the trench or parapet covered by log header beams. Gaps were created between the sandbags to provide loop holes for the sharpshooters to plink away at the Confederates whenever they showed themselves.²⁰ Of course the Confederates used the same technique and plinked away at the Union troops if they exposed themselves also. Confederate General Stephen Lee reported that in his division sector of the line, he had a sharpshooter posted every eight or nine yards ready to shoot at anything that moved.²¹ Osborn H. Oldroyd was a soldier in the 20th Ohio and described this experience:

May 21st.-We were relieved this morning before daylight, and slipped back to our camp as quietly as we could. The rifle pits where we watched were pretty close to the enemy, and we had to note every movement made by them. If they put their heads above their works we sent a hundred or more shots at them, and on the other hand, if any on our side made themselves too conspicuous, they fired in turn. So each army is watching the other like eagles. We must be relieved while it is yet dark, for if such a move were attempted by daylight, the enemy could get our range and drop many a man.²²

In the day to day plinking at each others lines, Confederate artillery was a non-player. Union artillery was so well placed, plentiful, and well supplied with ammunition, just the reverse situation of the Confederate artillery, that if Confederate artillery opened fire it was soon dismounted and taken out of action.²³ A good example of this was the emplacement of two ten inch Columbiads approximately 100 yards from the Third Louisiana Redan. Considering these ten inch pieces firing direct fire at 100 yards, the damage to the Confederate defensive works was devastating. The Confederates tried responding with a mortar but after firing a few shells Union counterfire rendered the mortar useless.²⁴ Brigadier General Moore of Forney's Division describes the Confederate artillery plight in his report of July 8, 1863:

In compliance with instructions received during the early part of the siege, we used our ammunition with a strict regard to economy. This enabled the enemy to approach more rapidly and with greater impunity than they otherwise could have done. They had two or three times as many guns as we, and generally of much heavier caliber. Being very near

our works, their sharpshooters and artillery rendered it frequently impossible to fire more than a few rounds during the day, for if our cannoneers were not shot down or pieces disabled, their artillery soon filled the embrasures with earth, so that the guns could not be used until night enabled us to repair the work.²⁵

The Union artillerymen were not free from danger. They may not have had to fear the Confederate counterbattery fire to a great degree, but the Confederate sharpshooters were another matter. The Confederates took to shooting through the embrasures of the batteries to directly hit an artilleryman or benefit from a ricochet. The Union soldiers responded by plugging the embrasures with sacks heavily packed with cotton or installing wooden blinds or swinging doors on a horizontal axis. When the gun was sighted or fired, the door or blinds were held open and swung back into position afterward.²⁶

At times both sides made night raids on each others trenches to inhibit their respective progress. The character of the raids was similar to techniques later used in World War I. For example, on the nights of June 21 and 22, 1863, Union work parties were attacked by Confederate raiders. One party in particular working on the sap near the Hall's Ferry Road was attacked and driven off by a sortie from the Confederate lines. After driving off the Union troops, the Confederates filled in the sap. A second sortie was made down the Hall's Ferry Road but was driven off by troops placed to protect the work party. June 24, 1863, a

limited bayonet attack was made by Union troops to seize a portion of Confederate trench. The lines in general were so close that at times pickets traded shots.²⁷ On May 26, 1863, a Confederate party was trying to construct an abatis obstruction across the swamp between the Warrenton Road and the river. Federal troops were sent to thwart the effort and a fight ensued. Some Federal troops were captured but the obstruction was prevented from being emplaced.²⁸ In other places on the line, pickets came to a mutual understanding that they would not fire on each other. In fact, in many instances they talk, passed letters back and forth, and traded tobacco for coffee.²⁹

By June 4, 1863, the Union forces had built their parallels to within 100 yards of the Confederate line. From these they commenced several saps against the most salient works: Stockade Redan, The Third Louisiana Redan, and Railroad Redoubt, and the Second Texas Lunette. Realizing that a Union assault at these positions was quite possible, the engineers in charge were ordered to place thunder barrels and loaded shells with short time fuses in these positions to use in case of an assault. Second echelon fortifications were also constructed behind these strong points and others that had been battered by Union artillery. If these points were seized or blown up by mines, the Confederates had fallback positions to prevent a penetration.

The Union and Confederate operations became an engineer chess game with moves and countermoves to achieve checkmate. The Confederates employed interesting techniques to stall Union efforts to breach the Confederate defense. The Union use of sap-rollers was a real problem. The Confederates had no way of preventing the Union saps from edging closer and closer. Major Lockett stated that a private came up with the idea of putting a wad of cotton soaked in turpentine into a hollow bullet and firing it into the sap-roller. The sap-rollers caught fire and had to be abandoned. The Union engineers not to be easily thwarted, merely ensured that the sap-rollers were heavily soaked with water and overcame the Confederate innovation.

The Union efforts to mine the Confederate line was answered by countermining. (see Appendix M) All mines of the Union effort were met by countermines by the Confederates. The T and Louisiana Redan was located on a very narrow ridge and had no ditch. The countermine was started from inside the redan by constructing a vertical shaft and then digging out horizontally to the location of the Union mine. The Union mine was completed first and exploded on June 25, 1863 below the redan and created a breach. The Union troops entered the breach in force but were stopped by the Confederate troops that had fallen back to the second echelon works just behind the redan. This incident illustrated how dangerous the work of the miners and

counterminers was. Six of the Confederate counterminers were buried alive in the countermine by the explosion. The countermining was still effective. On the same day of the incident described above and at another location, the Confederates exploded two countermines thereby destroying Union sap rollers, filling in the saps, and wrecking the related parallels that were very close to the Confederate lines.

The Confederates had other techniques of dealing with the Union sappers. On June 29, 1863, the Union sap at the Third Louisiana Redan was attacked by rolling thirteen inch shells down into it. This practice stopped Union work on this sap until the Union countered by building heavy wooden screens in front of the saps which warded off the shells. Major Lockett countered this countermeasure by rolling thunderbarrels, wooden barrels filled with 125 pounds of black powder, down into the saps. This technique was a temporary fix. The Union troops responded by mining under the redan and exploded it on July 1, 1863. The mine contained one and a quarter tons of black powder. The crater was twenty feet deep and fifty feet in diameter. The redan was destroyed. Six Confederates working in the countermine were never seen again. A seventh man working in the countermine, a negro, was blown over into the Union lines and arrived unhurt. The Union troops did not assault into this breach. Instead they bombarded it with artillery.

The Confederates had a great deal of trouble trying to plug this hole but were ultimately able to do so by creating enormous sandbags out of tents and wagon covers and rolling them into the breach.³⁰

By the surrender on July 4th 1863, the Confederates had eleven mines ready for exploding should an assault be made. They were positioned eighteen to twenty feet in front of the entrenchments and contained 100 to 125 pounds of black powder each. Their fuses were installed and ready to be lit.³¹

Even while the Union Army was concentrated in siege operations against Vicksburg, other engineer operations were taking place. Intelligence indicated that a Confederate force was operating northeast of Vicksburg. This being no small threat to his rear, General Grant sent Blair's division up the Yazoo to pillage the supply potential of the area and destroy all bridges and roads to the extent possible to render this avenue of approach impassable. ³² General Ransom was ordered to provide 300 men and the pioneer company from his 3rd Division to CPT Hickenlooper for a countermobility operation in the Union Army rear. From Bridgeport on the Big Black River back to the Union lines Captain Hickenlooper supervised the obstruction of the Bridgeport Road by felling trees across it. In addition to this road, Captain Hickenlooper dispatched his attached pioneer company to obstruct the road from Tiffin to Bovina

Station and a return road through Hebron. The party burned several bridges along this route also.³³ Brigadier General Osterhaus was ordered on May 29, 1863 by General Grant to burn the Big Black River Bridge as well as to tear up and destroy the railroad line as far east as he could. He additionally added the task to have his troops burn any other bridges or trestle work they could locate.³⁴ Finally, Special Order No. 144 directed all Corps commanders to obstruct all roads leading into the rear of their commands with the exception of the main Jackson Road and the roads to Haynes' Bluff.³⁵ Countermobility operations were still a significant part of this phase of the campaign.

A description of the events as they evolved at one approach will enhance the readers understanding of the character of this siege. General McPherson's Seventeenth Army Corps was placed in the center of the Union line facing a most formidable redoubt, the Third Louisiana Redan, referred to in Union reports as Fort Hill. The approach, known as Logan's Approach, was over a broad flat ridge extending eastward for almost five hundred yards before descending into a deep ravine.(see Appendix L)³⁶ "This redoubt became the main objective point of the engineering operations of the Seventeenth Army Corps."³⁷ McPherson's 3rd Division commanded by General Logan occupied the line immediately opposite the redan and the greatest part of the labor to build the required sap and mine fell to his troops.

From the very first, the pioneers of the corps were employed constructing sap-rollers, gablons, and fascines. 150 man details of line troops worked day and night in shifts on the main sap. The head of the sap began about 150 yards southeast of the White House, a place out of the line of sight of the Confederate line. Captain Hickenlooper described how the sap was started:

The line of the first section was selected during the night of the 23d under cover of an attack made upon the enemy's pickets. Upon this line the workmen were placed at intervals of about five feet, each equipped with a gablon, pick, and shovel, with instructions to cover themselves securely and dig a connection through to the adjoining burrow before daylight. The day relief was engaged in deepening and widening the sap thus commenced, and on the following night another section was laid out and occupied in the same manner.³⁸

The truce of May 25, 1863, called for the purpose of policing up the decaying bodies resulting from the attack of May 22nd, provided the engineers an excellent opportunity to get a first hand look at the ground they were required to sap through. It also provided a closer look at the enemy's fortifications without risk. Captain Hickenlooper on the Union side and Major Lockett on the Confederate were two of the Vicksburg Campaign engineers that didn't overlook this opportunity.³⁹

Efforts were required to protect the troops digging the sap. To protect the sap as it was dug forward, a battery of guns was emplaced at the highest point between

the White House and the redan. This battery, later known as Battery Hickenlooper, and a battery of two 8 inch naval guns provided excellent protective fire for the sap by silencing the guns in the redan. Still effective however were the Confederate sharpshooters. Not a hand could be raised above the parapet without danger of it being hit by rifle fire. Sap-rollers were constructed to protect the workers from the rifle fire. They worked well until the Confederates figured out a way of setting them on fire with incendiary bullets. When the saps reached the vicinity of the Confederate lines Mr. Tresillian, civil assistant engineer, built Coehorn mortars. These were sections of gum-tree logs with cylinders drilled into them and reinforced with iron bands. They were charged with black powder and used to lob six or twelve pound shells over the Confederate parapets from a distance of 100 to 150 yards to discourage the sharpshooters.⁴⁰ They proved exceedingly effective as the quote from Confederate Major General Forney's report testifies:

He also opened from what is supposed to be a Cohorn mortar, which throws its missiles among the men with great accuracy, killing and wounding many, and tending much to dishearten the men.⁴¹

The general work regimen for the laborers consisted of digging forward at night and widening and deeping by day. This routine was continued until June 22, 1863, when the enemy ditch was reached. At this point the Corps was

canvassed for men that had practical coal mining experience. Thirty-six men were selected by Captain Hickenlooper and divided into two shifts. Each shift, a day and a night shift, was divided into three reliefs. On the night of June 22, 1863, these men were issued drills, short-handled picks, and shovels. Work began immediately to dig a mine under the enemy redoubt. Each relief worked an hour at a time: two men picking, two men shoveling, and two men hauling back the dirt filled sacks of spoil. The work was completed rapidly as the soil consisted of red clay that did not required bracing. The length of the mine shaft extended horizontally under ground forty-five feet. At the end of the shaft, three spurs were dug at forty-five degree angles from each other for an additional fifteen feet. 800 pounds of black powder was placed in the center spur and 700 pounds of black powder in the other two for a total of 2200 pounds of black powder. Two fuses were laid to ensure detonation.

The Confederates weren't idle at this time. They were active in attempting to thwart the Union objective. They threw handgrenades and rolled artillery shells with their fuses hand lit into the sap. They also countermined in attempts to break into the Union mine. At the very end, they were so close in their countermining efforts that Union miners could hear the Confederates conversations.⁴²

When the report that the mine was ready reached General Grant, he ordered his corps commanders to prepare

for an assault. With the springing of the mine, artillery and musket fire would saturate the Confederate line while an assault would be made into the breach. Volunteers from the 31st and 45th Illinois as well as ten picked pioneers under the command Captain Hickenlooper would move forward and take position of the Third Louisiana Redan or its remnants. At 3 p.m. the mine was sprung:

At the appointed moment it appeared as though the whole fort and connecting outworks commenced an upward movement, gradually breaking into fragments and growing less bulky in appearance, until it looked like a immense fountain of finely pulverized earth, mingled with flashes of fire and clouds of smoke, through which could occasionally be caught a glimpse of some dark objects,--men, gun-carriages, shelters, etc. Fire along the entire line instantly opened with great fury, and amidst the din and roar of 150 cannon and rattle of 50,000 muskets the charging column moved forward to the assault.⁴³

The attack force had little difficulty entering the crater, but going beyond the hole was another matter. The Confederates anticipating this occurrence had constructed another defensive line behind the redan and from this strong position poured fire into the assault force. Shells with fuses lit were rolled into the crater and the slaughter was terrific. The engineers that formed part of the assault force rapidly built bunkers out of the timbers lying about the wrecked redan and provide some cover from the devastating fire and shell. A parapet was thrown up across the crater and the assault force sought cover behind it and

stayed in place. In the days following a new mine from this point was constructed and was sprung on July 1, 1863, totally wrecking the entire fort. Also during this time the sap had been widened to facilitate rapid movement of troops through this avenue for the general assault that was planned but not carried out due to the Confederate surrender on July 4, 1863.⁴⁴

The Union labor force present to construct the batteries, entrenchments, roads, and perform other related engineer duties consisted of one battalion of the Engineer Regiment of the West, the Kentucky Company of Engineers and Mechanics, several divisional pioneer companies, hired negro laborers, and work details from line units.⁴⁵ It can be clearly seen that the Union Army had a considerably larger engineer force than the Confederates.

The assignment of labor for these different organizations was carefully controlled. Major Tweeddale's battalion of the Engineer Regiment of the West performed various technical tasks. They were employed constructing fortifications at Haynes' Bluff during the period of May 28, 1863 thru July 1, 1863. They assisted in the construction of the roads from the Yazoo River across Chickasaw Bayou and up the bluffs to the rear of Grant's army. A detachment of twenty engineers was left on site and to maintain this vital line of communication. Engineers from the Regiment made surveys for lateral roads behind the Union lines to

facillitate movement of Infantry formations. Company D of the regiment even repaired the steamer Auglaze in late May.⁴⁶ The Kentucky Company of Engineers and Mechanics was detailed from the beginning of the siege to make gablons and fascines and to collect them in their camp. Their camp soon became the gablon/facine supply depot for the entire Thirteenth Corps.⁴⁷ The pioneer companies were assigned to build roads, entrenchments, saps and mines. They produced engineer supplies such as sap-rollers, facines, and gablons. The work details from the line units performed the vast amount of heavy unskilled physical labor that the seige required.

The quality of the labor force varied from the highly trained engineer troops to work details obtained from line units. In the opinion of the Chief Engineer, Captain Prime and later Captain Comstock, the most effective laborers were the pioneers and negroes.

The labor performed by details from the line, as is usual in such cases, was very light in comparison with that done by the same number of pioneers or negroes. Without the stimulus of danger or pecuniary reward, troops of the line will not work efficiently, especially at night, after the novelty of the labor has worn off.⁴⁸

Their report goes on to qualify this statement by stating that the state of discipline of the unit and energy of the officers was the true determining factor of how much labor the troops performed.⁴⁹ From examining the reports in

general, it must be concluded that there weren't near enough engineers or ersatz engineers to do the vast amount of labor required. Again as we have seen in the other phases of this Campaign, the engineers or pioneer troops did the specialty work like constructing fascines, gabions, sap-rollers, and digging the mines. The line troops did the axe, pick, and shovel work as well as heavy labor such as carrying siege material to the lines; this is in addition to performing as sharpshooters to keep the Confederates' heads down.⁵⁰

The best description of engineer operations in sapping and utilization of the different type of troops at Vicksburg is made by Captain William Koseak, acting Engineer for the Fifteenth Corps. In his report he described the composition of the team he used to dig the sap of Ewing's approach:

A part of the pioneer detachment of the Second Division, Fifteenth Army Corps, under command of Captain Ashmead, furnished my saps with sap-rollers, gabions, fascines, and sap-faggots. Company I, Thirty-fifth Missouri Volunteer Infantry, Lieut. C. Lochbihler commanding, acted as sappers and miners, and an infantry detail of 50 men, for day and night, constituted the force that I used in the approach against the main bastion in front of Brigadier-General Ewing's brigade.⁵¹

Engineer officers performed much the same duties that they had throughout the campaign. They surveyed the enemy lines and the ground in front of the lines for the location of saps, parallel entrenchments, and the location of batteries. They surveyed areas behind the lines for camps

and roads. They supervised the work of details of line troops in the vast construction of the siege.⁵²

The duties of the engineer officer during the siege at Vicksburg were dangerous as well as arduous. Captain Pitzman, General Sherman's Chief Engineer, was detailed to survey the terrain in front of the Confederate lines in order to select favorable ground for mining under the enemy batteries. He was provided with an escort of a company of infantry for his protection. While conducting the survey, a Confederate sharpshooter shot him through the hip. His part of the Vicksburg Campaign was over.⁵³ The life of the Confederate Engineer was equally hazardous:

On July 1, before the explosion of the mine, Lieutenant [P.J.] Blessing, assistant engineer, was painfully wounded by a sharpshooter. This officer had been unremitting in his labors night and day during the siege, often showing a gallantry and devotion worth of reward.⁵⁴

The equipment or supplies for the siege varied and many times consisted of field expedients. The revetments used by Union troops to construct entrenchments were made out of various materials. Gabions and fascines were commonly used. The pioneer company of Seventeenth Corps, 3rd Division alone made 1200 fascines and 650 gabions during the siege. Vines and cane were plentiful and constituted the primary materials used to weave these. Yet the troops didn't like the effort required to make them. As a result, cracker boxes were frequently substituted as they were

plentiful and required little work to install.⁵⁵ Sap-roller design was also adapted to the situation as explained by engineer Lieutenant Peter C. Hains:

Sap rollers of the size laid down in the books, could not be used at all. They were too heavy. They had to be made lighter in order to move them over the hilly ground. This was done in various ways, sometimes they were hollow, two empty barrels being placed end to end to form the hollow space. When our sap rollers at the railroad redoubt had reached the crest of the counterscarp and it was desired to know the width and depth of the ditch, a looking glass was procured and fastened to a long pole and raised from behind the sap roller and inclined forward. In this way a good view of the ditch could be had.⁵⁶

Sap-rollers were commonly made, as described above, out of barrels with facines lashed to the outside of the barrels with bundles of cane inbetween.⁵⁷ Another version of a sap-roller was termed a cotton car. It was essentially a light flat rail car on steel wheels loaded with bales of cotton. The car was pushed along in front of the trench as it was dug. One such cotton car was used by details from the 20th Ohio in its work digging a sap to the Third Louisiana Redan. The Confederates set it afire with incendiary bullets. The innovative Yankees produced another and liberally soaked it with water. Another interesting devise the Union soldiers created was an ad hoc selge tower. The tower was ten to twelve feet high with steps inside. At the top was a mirror with which the observer could indirectly see inside the enemy's works to count guns and

soldiers. Sergeant Olderoyd indicated that the tower wasn't used long because it drew too much attention.⁵⁸

Upon closure with the Confederate works the Union trenches proved to be lower. The Confederates were better able to throw grenades and shells with their fuses lit into the Union saps. As described earlier, one engineer built ersatz mortars. Lieutenant Hains contrived another device he termed "springboards" for flinging lit 6 pound shells, that were too heavy to throw by hand, over the enemy parapets into the trenches.⁵⁹

The aggregate length of the Union trenches dug at Vicksburg was twelve miles. Eighty-nine artillery batteries were constructed and there were 220 artillery pieces in position by June 30, 1863. The batteries were constructed most often by the pioneer companies of their respective divisions or under the supervision of the artillery battery commander. The materials used to construct the batteries varied from textbook batteries with gabions and fascines for revetments and heavy planks for the firing platforms to rough boards, fence rails, or cotton bales for reveting and wall boards from the nearest barn or cotton gin for the platform. The materials of construction were directly correlated to what was close by and available.⁶⁰

From May 23, 1863 until July 1, 1863, the work of pushing the Union position forward to the Confederate positions had been prosecuted with vigor. By July 1, 1863,

the Union saps were from five to one hundred yards distance of the Confederate line in at least ten locations. Orders were given to prepare for an all out assault to seize the city on July 6, 1863. The approach trenches were ordered widened to accomodate troops marching four abreast. Planks and bags of cotton were prepared to facilitate troops charging across the ditches.⁶¹ A general assault to seize Vicksburg would have been conducted had not General Pemberton surrendered on July 4, 1863.

In Major Lockett's opinion the timing of the surrender was appropriate. The troops were physically exhausted and capable of only standing in the trenches and firing their weapons. The Union artillery had dismounted many Confederate guns and severely battered the defensive positions. The Union engineer operations were so effective that the Union lines were close enough that the Union forces merely had to dash over the parapets and enter the Confederate lines in overwhelming force. In Major Lockett's mind it was over.⁶² Some of the diaries and unit histories bear this opinion out. W.H. Tunnard in the "Reminiscences of the Third Louisiana Infantry" described the situation:

To the perils of the siege began now to be added the prospects of famine. The gaunt skeleton of starvation commenced to appear among the ranks of the brave defenders.

It seems wonderful that human endurance could withstand the accumulated horrors of the situation. Living on this slender allowance, fighting all day

In the hot summer's sun, and at night, with pick-axe and spade, repairing the destroyed portions of the line, it passed all comprehension how the men endured the trying ordeal.⁶³

The effects of the engineer operations by the Union Army during the siege was the deciding factor in the city's capture. It is well known that the Confederates were running low of food and General Pemberton surrendered Vicksburg rather than have it taken by storm. It is important to remember, the decision to surrender was undoubtedly a result of the impending unstoppable Union assault and the impossibility of breaking out. The effect of a concentrated Union artillery preparation fire followed by a quick attack all along the line would be too much for the Confederate defenders to withstand. The unstoppable construction of saps that allowed the Union forces to close with the Confederate line to a distance that would guarantee multiple breaches in the Confederate defenses was the deciding factor that brought about the fall of Vicksburg. That deciding factor was provided by engineer operations conducted by the engineer officers, engineer and pioneer troops, and labor details provided by line units.

END NOTES

¹S. H. Lockett, "The Defense of Vicksburg," The Tide Shifts, vol. 3, Battles and Leaders of the Civil War (Secaucus, N.J.: Castle, 1989), 488.

²Ibid.

³Ibid.

⁴Lockett, 488; Report of Major Lockett, 26 July 1863, The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies 128 vols. (Washington: Government Printing Office, 1880-1901) series I, 24 pt 3: 329-330. (Cited hereafter as QR; all citings will be from series I.)

⁵Report of MAJ Lockett, 26 July 1863, QR, 24 pt 2: 329-330.

⁶Ibid, 330-331.

⁷Report of MG Grant, 6 July 1863, QR, 24 pt 1: 54-55.

⁸Ibid, 56.

⁹Special Order No. 140, 25 May 1863, QR 24 pt 3: 348.

¹⁰U.S. Grant, Personal Memoirs of U.S. Grant, ed. E. B. Long (New York: Da Capo, 1982), 279. (Hereafter referred to as Grant Memoirs)

¹¹Grant, Memoirs, 279; Report of CPT Jenney, 22 September 1863, QR, 24 pt 2: 187-188; Strength Report, 31 May 1863, QR, 24 pt 3: 370-371.

¹²U.S. Grant, "The Vicksburg Campaign," in The Tide Shifts, vol. 3, Battles and Leaders of the Civil War (Secaucus, N.J.: Castle, 1989), 521. (Hereafter referred to as Grant, Campaign)

¹³Grant, Memoirs, 280; Report of Captains Prime and Comstock, 29 November 1863, QR 24 pt 2: 169.

¹⁴Grant, Memoirs, 280.

¹⁵Ibid, 285.

¹⁶Report of CPTs Prime and Comstock, 29 November 1863, QR, 24 pt 2: 171.

17For an excellent description of Ewing's Approach see "Ewing's Approach in the Siege of Vicksburg" by Edwin C. Bearss in The Military Engineer (January-February 1962), 26-28.

18Grant, Campaign, 521.

19Report of CPTs Prime and Comstock, 29 November 1863, QR, 24 pt 2: 177; Report of CPT John Wilson, September 1863, QR, 24 pt 2: 180.

20Grant, Memoirs, 281.

21Report of BG Lee, 24 May 1863, QR, 24 pt 3: 914-915.

22Osborn H. Oldroyd, A Soldier's Story of the Siege of Vicksburg, From the Diary of Osborn H. Oldroyd (Springfield: Published for the Author, 1885), 30.

23W. H. Tunnard, "Reminiscences of the Third Louisiana (Confederate) Infantry in the Trenches in Front of Logan's Division," Appendix G of A Soldier's Story of the Siege of Vicksburg, From the Diary of Osborn H. Oldroyd, by Osborn H. Oldroyd (Springfield: Published for the Author, 1885), 133.

24Ibid, 138.

25Report of BG Moore, 8 July 1863, QR, 24 pt 2: 381-382.

26Report of Lt Hains, 30 July 1863, QR, 24 pt 2: 182.

27Report of CPT Freeman, 1863(exact date unknown), QR, 24 pt 2: 193-194; Report of CPTs Prime and Comstock, 29 November 1863, QR, 24 pt 2: 171.

28Lockett, 490.

29Report of CPTs Prime and Comstock, 29 November 1863, QR, 24 pt 2: 175.

30Lockett, 491.

31Lockett, 292.

32Grant, Memoirs, 284.

33Report of CPT Hickenlooper, 23 October 1863, QR, 24 pt 2: 200.

- ³⁴MG Grant to BG Osterhaus, 29 May 1863, QR, 24 pt 3: 362.
- ³⁵Special Order No. 144, 29 May 1863, QR, 24 pt 3: 363.
- ³⁶Report of CPTs Prime and Comstock, 29 November 1863, QR, 24 pt 2: 173.
- ³⁷Andrew Hickenlooper, "The Vicksburg Mine," in The Tide Shifts, vol. 3, Battles and Leaders of the Civil War (Secaucus, N.J.: Castle, 1989), 539.
- ³⁸Hickenlooper, 540.
- ³⁹Ibid; Lockett, 489-490.
- ⁴⁰Hickenlooper, 540; Report of CPTs Prime and Comstock, 29 November 1863, QR, 24 pt2: 173.
- ⁴¹Report of MG Forney, 2 July 1863, QR, 24 pt 2: 364-365.
- ⁴²Hickenlooper, 541-542.
- ⁴³Ibid, 542
- ⁴⁴Ibid.
- ⁴⁵Organization of Forces, 18 May-4 July, 1863, QR, 24 pt 2: 148-149.
- ⁴⁶Dr. W. A. Neal, An Illustrated History of the Missouri Engineer and the 25th Infantry Regiments (Chicago: Donohue and Henneberry, 1889), 106-107.
- ⁴⁷Report of Lt Hains, 30 July 1863, QR, 24 pt 2: 181.
- ⁴⁸Report of CPTs Prime and Comstock, QR, 24 pt 2: 177.
- ⁴⁹Ibid.
- ⁵⁰Report of COL Belknap, 7 August 1863, QR, 24 pt 2: 306-307; Report of COL Mc Nulta, 10 July 1863, QR, 24 pt 2: 320-321; Report of BG Leggett, 6 July 1863, QR, 24 pt 2: 293-294; Joseph Greclan, History of the 83rd Regiment, Indiana Volunteer Infantry, For Three Years with Sherman (Washington, D.C.: 1865), 32.
- ⁵¹Report of CPT Kossak, 13 July 1863, QR, 24, pt 2: 189.

52Report of Lt Hains, 30 July 1863, QR, 24 pt 2: 180-181.

53Julius Pitzman, "Vicksburg Campaign Reminiscences," The Military Engineer No 80 (March-April 1923): 115.

54Report of MAJ Croom, 9 July 1863, QR, 24 pt 2: 377.

55Olderoyd, 47: Report of CPTs Prime and Comstock, QR, 24 pt 2: 177; Report of CPT Tresillian, 1 June 1863, QR, 24 pt 2: 208.

56Peter C. Hains, "The Vicksburg Campaign," The Military Engineer No 69 (May-June 1921): 270.

57Report of Lt Hains, 30 July 1863, QR, 24 pt 2: 184.

58Olderoyd, 47; Tinnard, 136.

59Report of Lt Hains, 30 July 1863, QR, 24 pt 2: 186.

60Report of CPTs Prime and Comstock, QR, 24 pt 2: 176.

61Grant, Memoirs, 289-290.

62Lockett, 492.

63Tunnard, 136.

CHAPTER 6

SUMMARY AND CONCLUSIONS

In chapter one of this thesis, I proposed my research question: How were engineer operations conducted during the Vicksburg Campaign and were they significant. I concluded that in order to answer this question, I would have to answer two secondary questions. Those are: (1) what was typical of engineer operations during this period, and (2) what were the types of engineer operations conducted during the campaign. In chapters one thru five I clearly answered these questions by describing in detail the Engineer story of the Vicksburg Campaign. In this chapter, I will summarize the answer to both of the secondary questions first and then state my conclusions concerning the importance of engineer operations during the Vicksburg Campaign.

Engineer operations during the American Civil War were very different from those we know in today's Army. At the beginning of the war only one engineer company in existed in the United States Army. As the Union and Confederate armies were organized and rapidly expanded, additional engineer organizations were created.

Unfortunately, there never was an adequate number of official engineer organizations to perform the standard engineer tasks of providing mobility, countermobility, survivability, sustainment, and topographical services. The few official units created were augmented by volunteer engineer units and ad hoc units called Pioneers. In spite of the creation of pioneer and ad hoc engineer units, the need for engineer units was far greater than the supply. Much of the work that required engineers was provided by line troops supervised by engineer officers. It was common for each division to have an engineer officer on the division commander's staff. Corps commanders had an engineer officer with the title of Chief Engineer. The Chief Engineer usually had several assistants that were capable of surveying and map making. In the typical scenario for engineer operations during a campaign, the scarce engineer units performed the technical engineering functions while the pioneers and details of line troops, supervised by engineer officers, performed the unskilled labor intensive tasks.

The campaigns of the American Civil War were not conducted on billiard table-like terrain. Difficult terrain was almost always a major factor. The Vicksburg Campaign was conducted in some of the most difficult terrain in the entire country. This area of operation contained a multitude of rivers, swamps, forests, hills, and broken

country that required tremendous mobility operations in order to maneuver units of any size, let alone entire armies. For land movement, extensive engineer operations were required to clear passages thru swamps and thick forests. Extensive road and bridge construction was required to move troops, supply trains, and artillery. Because rivers, bayous, and creeks laced the countryside, water movement was practical and utilized. This required clearing jungles of vegetation from the banks of these water courses for passage of boats of any significant size. Mobility operations were essential for movement in this area of operations.

Engineer operations were not limited to just providing mobility. Both armies practiced countermobility operations to inhibit their adversary's movement. The Confederate and Union armies both engaged in building fortifications both at Vicksburg and in the surrounding area of operations. Map making was a major requirement for both armies before operations could be conducted in this vast uncharted terrain. In essence, all the standard engineer functions, mobility, countermobility, survivability, sustainment, and topographical services, were required and conducted by both armies in this historic campaign.

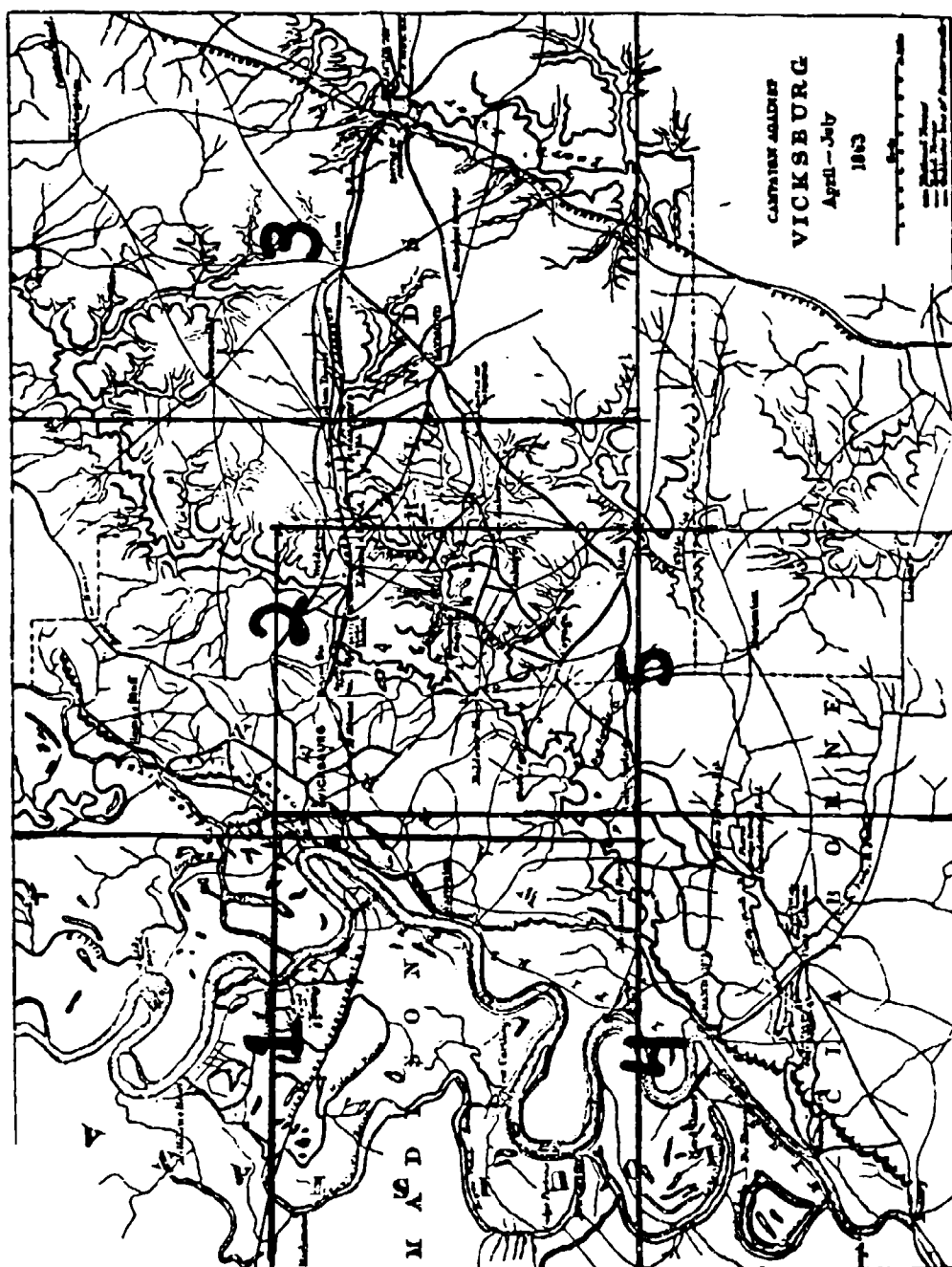
The Vicksburg Campaign could not have been conducted by Union forces, let alone brought to a successful conclusion, without effective engineer operations.

Vicksburg was indeed a Gibraltar of the West. Due to Confederate engineer operations, it was an entrenched camp sitting upon dominant terrain behind a major obstacle. The major obstacle was the Mississippi and Yazoo Rivers and their respective flood plains. Without the ability to cross this obstacle, the Union Army had no hope of reaching Vicksburg to begin combat operations. The Operations in the Bayous, even though unsuccessful for the Union, were key in training and molding the Union Army for the Campaign of Maneuver that allowed it to cut its way down the west bank of the Mississippi River and cross to high dry ground on the east side. The Operations in the Bayous, on the other hand, were successful for the Confederate engineers in a countermobility context. The Campaign of Maneuver on the east side of the river was dependent upon speed to leap river obstacles in order to maintain the tempo that confounded the Confederate leaders. The ability of Union engineers to rapidly bridge river obstacles provided that speed. Finally, successful siege operations brought about the fall of Vicksburg. Engineer operations were the key to the Vicksburg Campaign. Without them, the armies could never have joined in battle and a Union victory could not have occurred.

The importance of studying the Vicksburg Campaign goes beyond merely increasing our body of knowledge of its history. It is important to study campaigns like Vicksburg

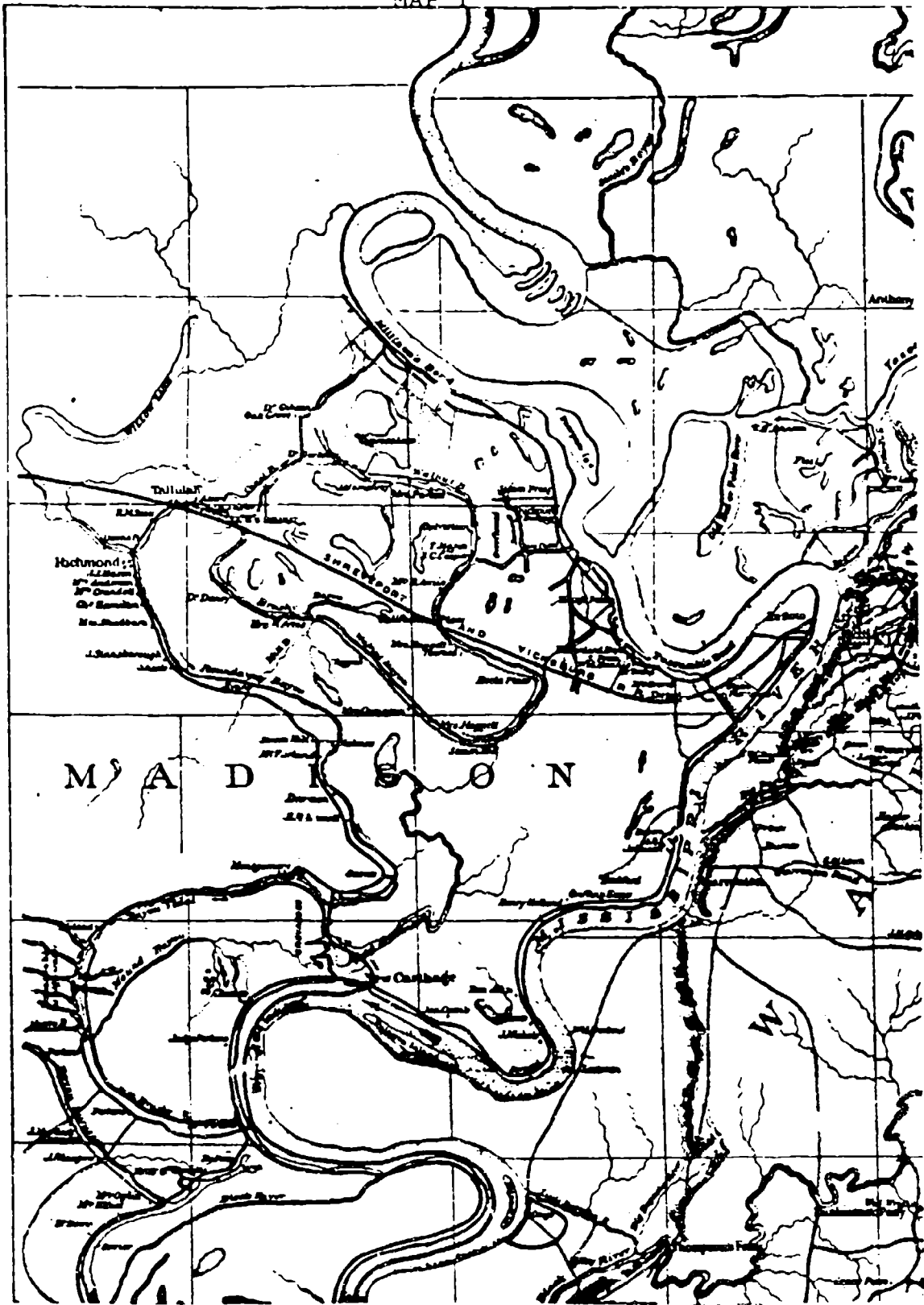
to provide the professional military officer insight into warfighting operations. Future campaigns will be fought by our Army in terrain just as difficult as that faced at Vicksburg. Learning how past commanders used engineers and tackled mobility, countermobility, and survivability problems produces a problem solving frame of mind that can be used to solve engineer problems today and tomorrow. The study of the Vicksburg Campaign in an engineer context may well help leaders in today's Army better understand Airland Battle Doctrine and the Mobility, Countermobility and Survivability Operating System.

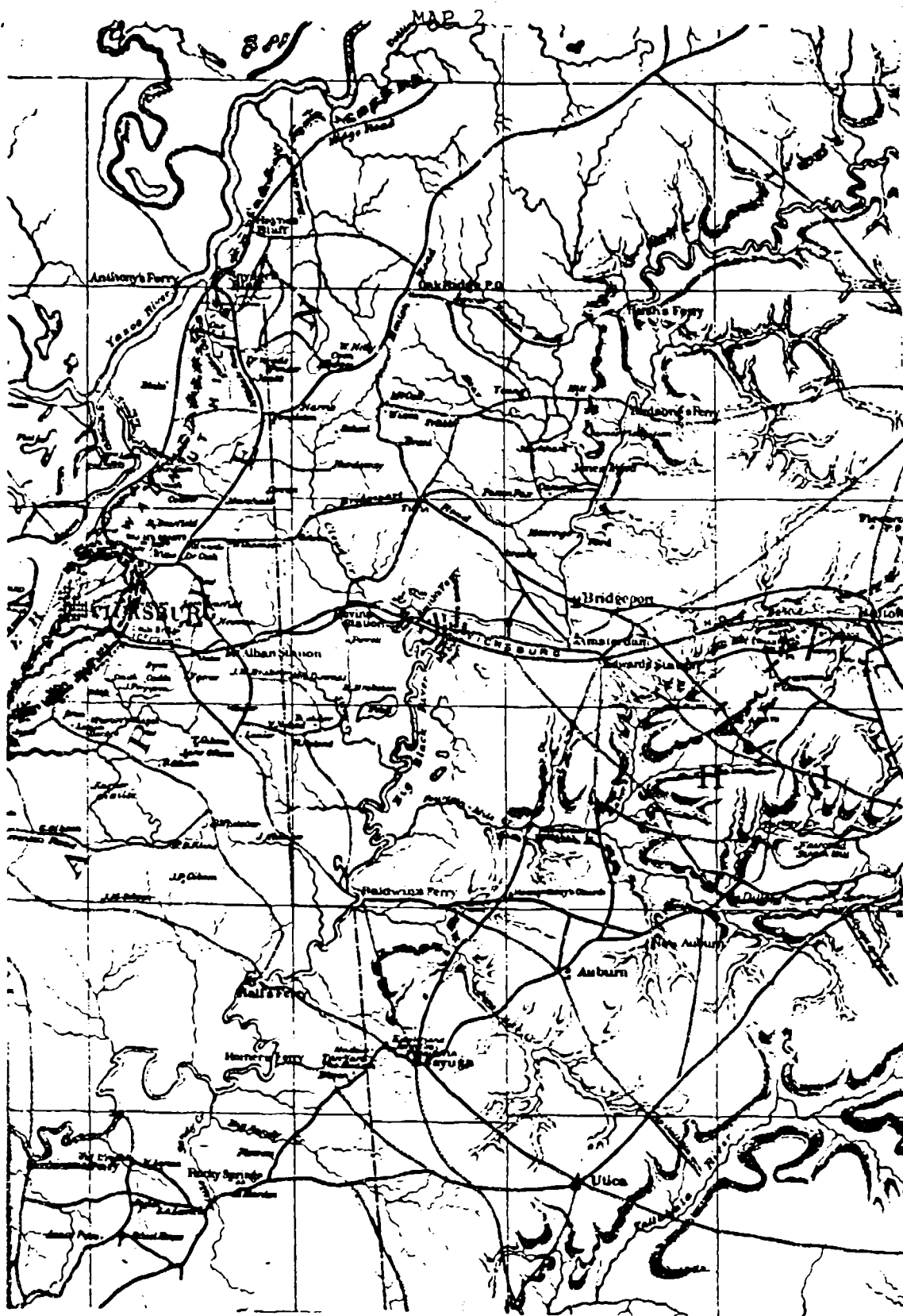
APPENDIX A

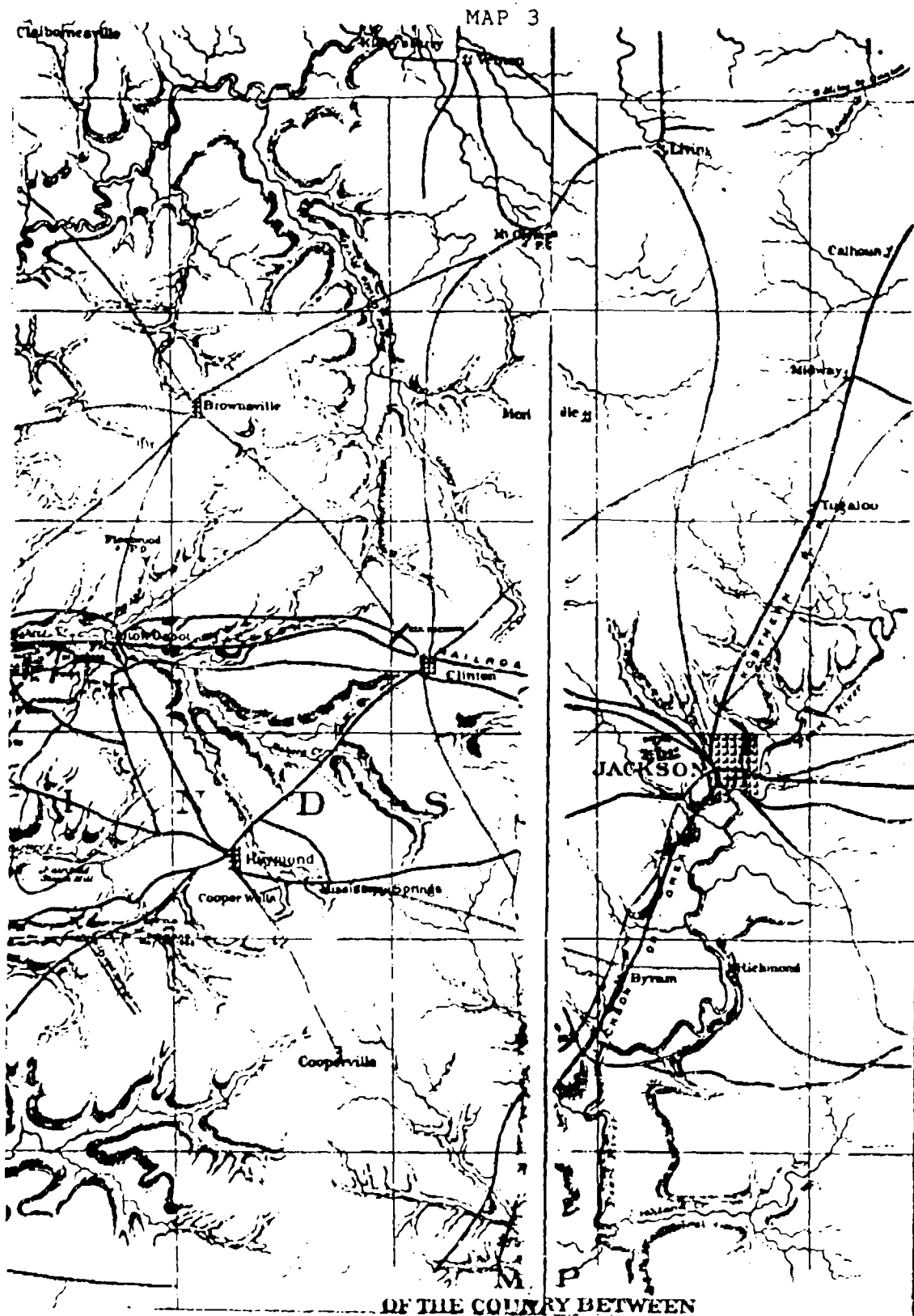


Appendix A consists of five maps as shown on above master. Master from U.S. Grant, "The Vicksburg Campaign," Battles and Leaders of the Civil War, vol. 4, (New York: the Century Co., 1888), 494. Maps 1 thru 5 are from the Atlas to Accompany the Official Records of the Union and Confederate Armies, ed. Major George B. Davis, Leslie J. Perry, and Joseph W. Kirkley, (Washington: Government Printing Office, 1891-1895), plate 36.

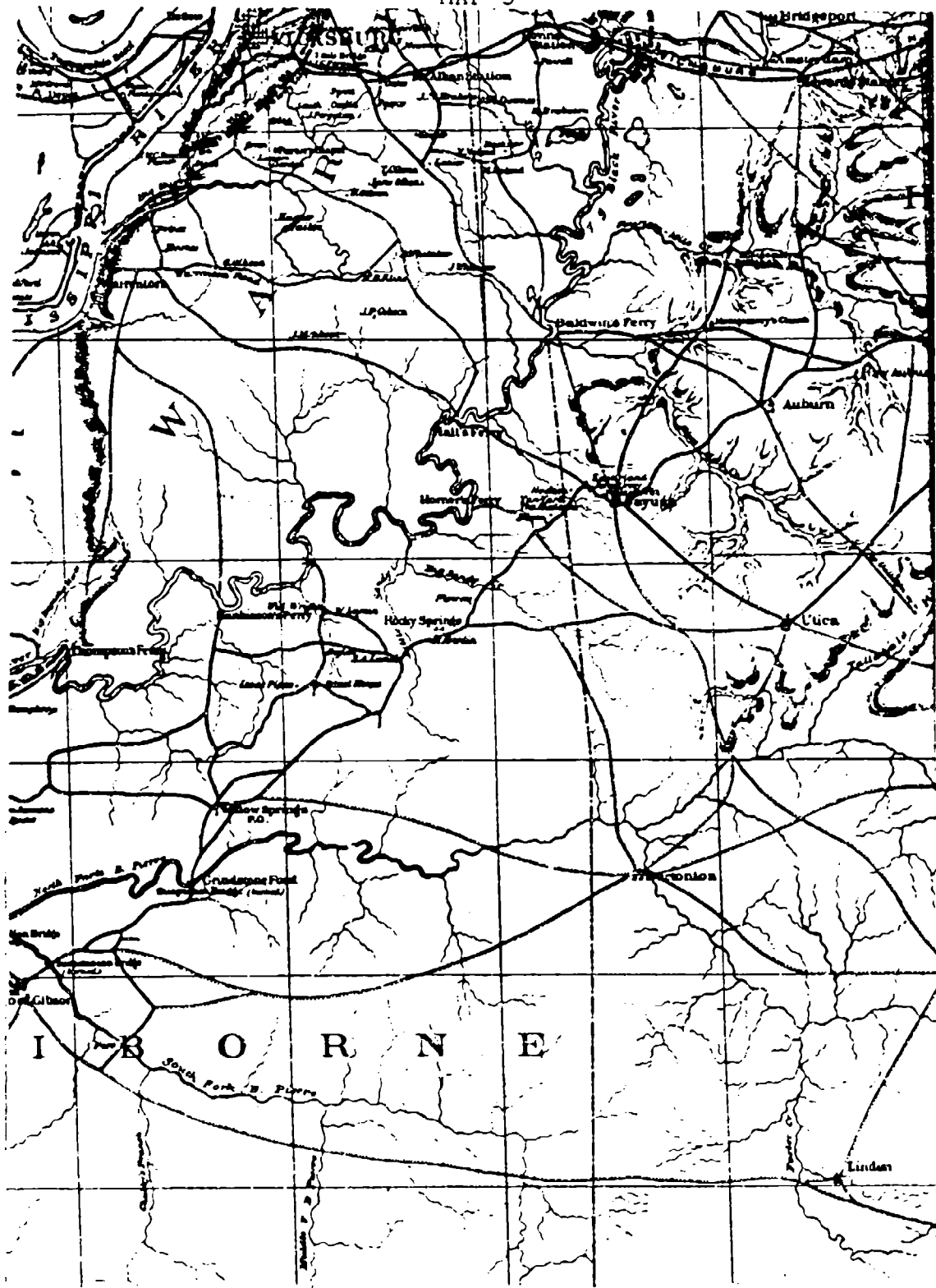
MAP 1







MAP 5

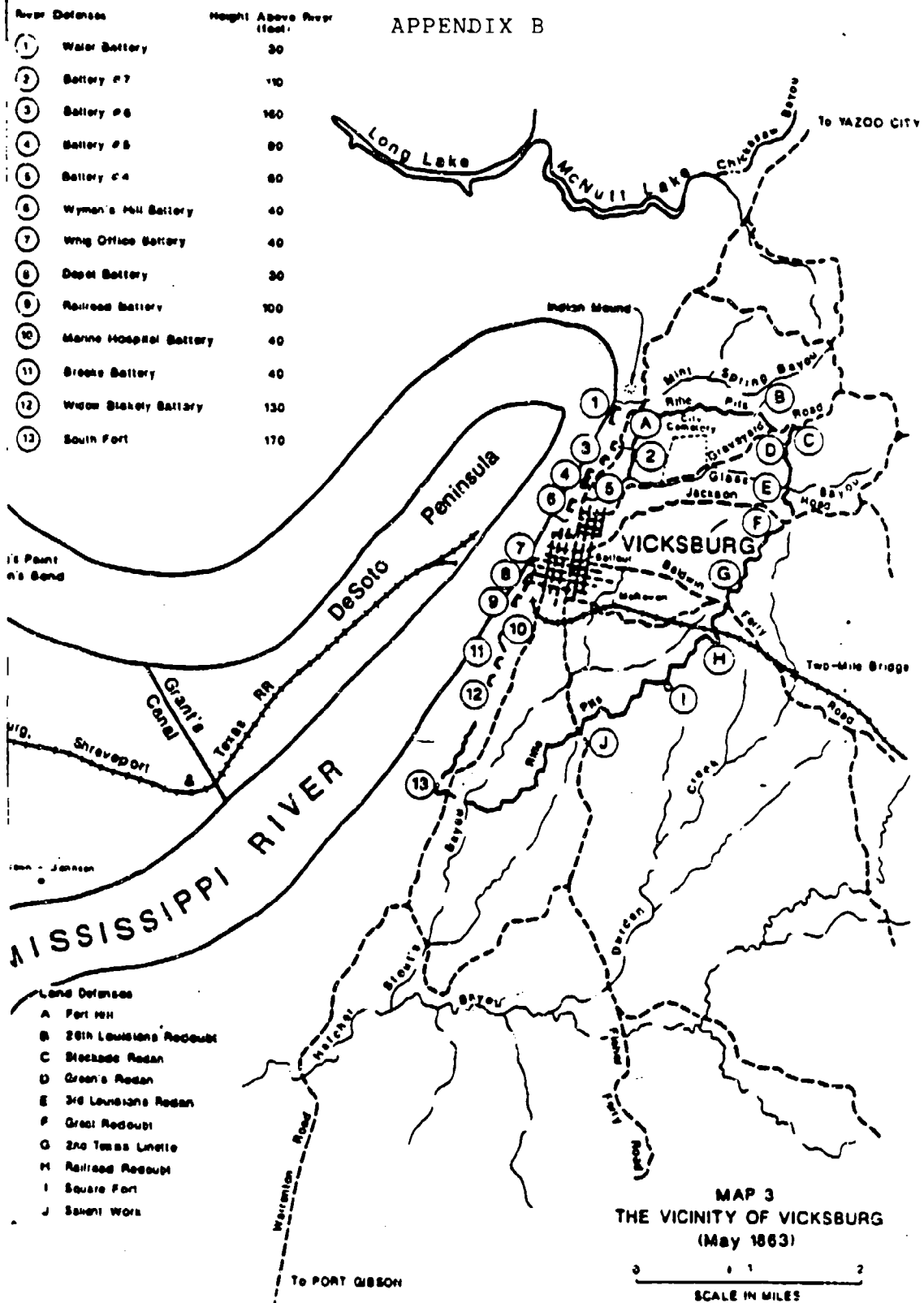


APPENDIX B

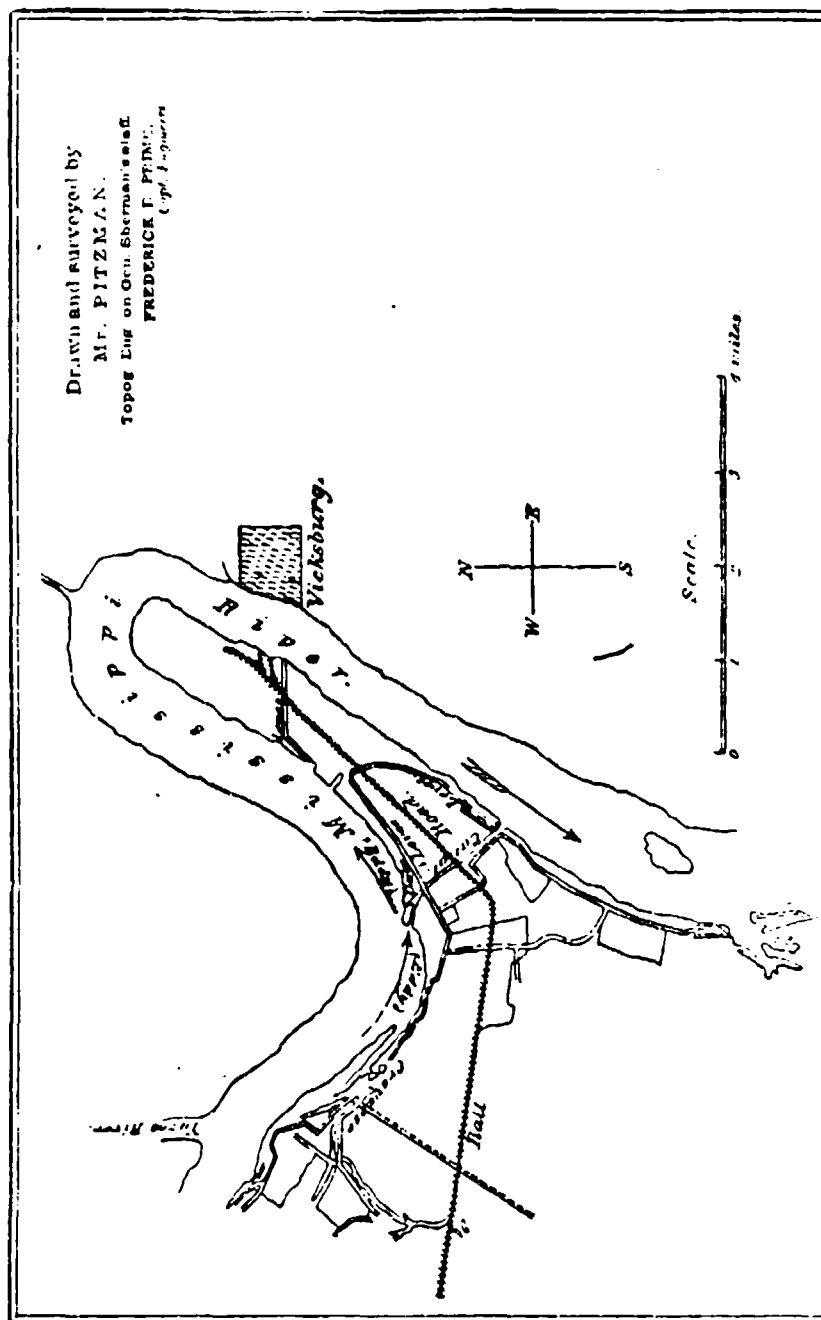
The map on the following page was taken from:

Warren E. Grabau, "The Vicksburg Campaign Preliminary Study Materials and Maps of the 1989 Second U.S. Army Commander's Staff Ride," (Vicksburg, Mississippi: 412th Engineer Command, June 1989), 328.

APPENDIX B

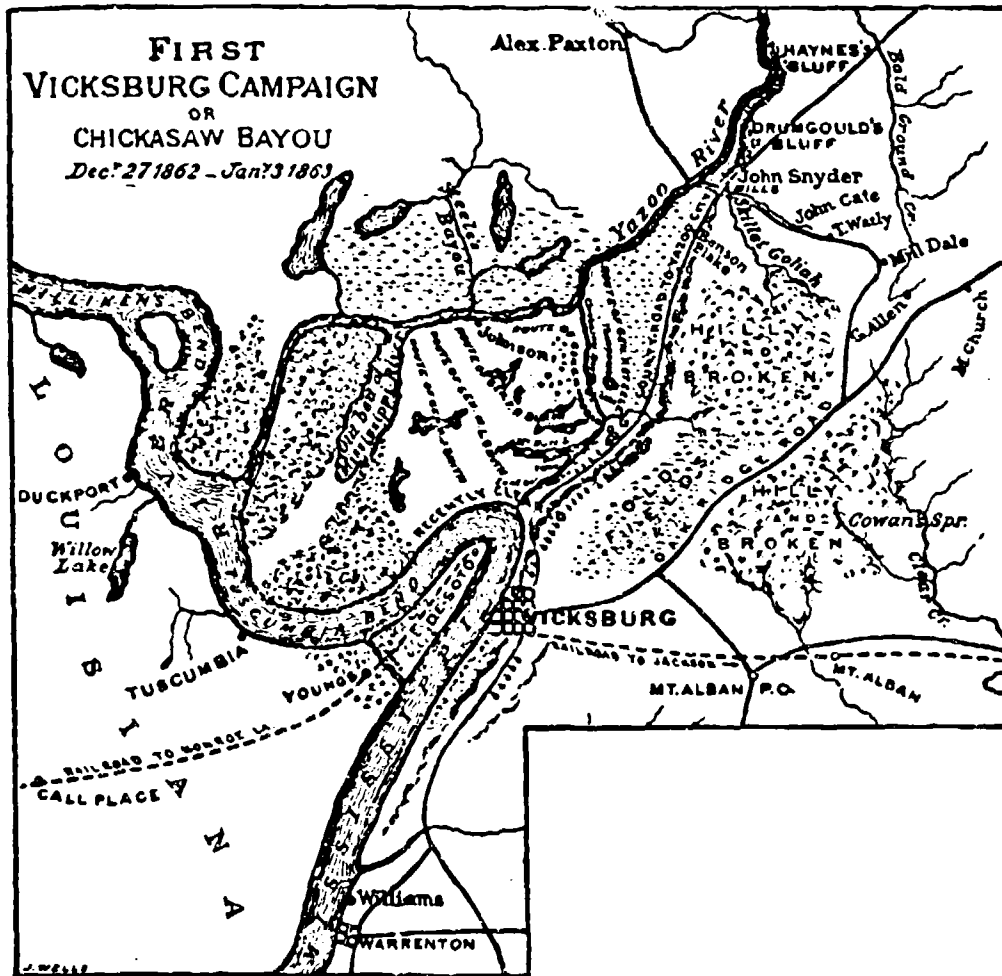


APPENDIX C



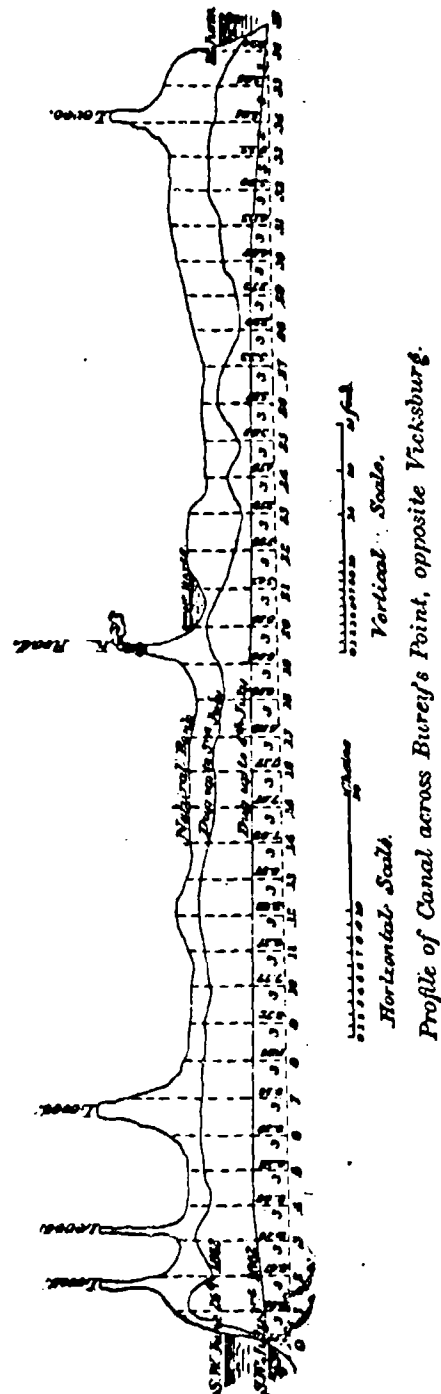
From the Report of CPT Prime, 30 January 1863, The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies 128 vols. (Washington: Government Printing Office, 1880-1901) series I, 24 pt 1: 118.

APPENDIX D



Map from "The Assault on Chickasaw Bluffs," Battles and Leaders of the Civil War vol. 4 (New York: the Century Co., 1888), 465.

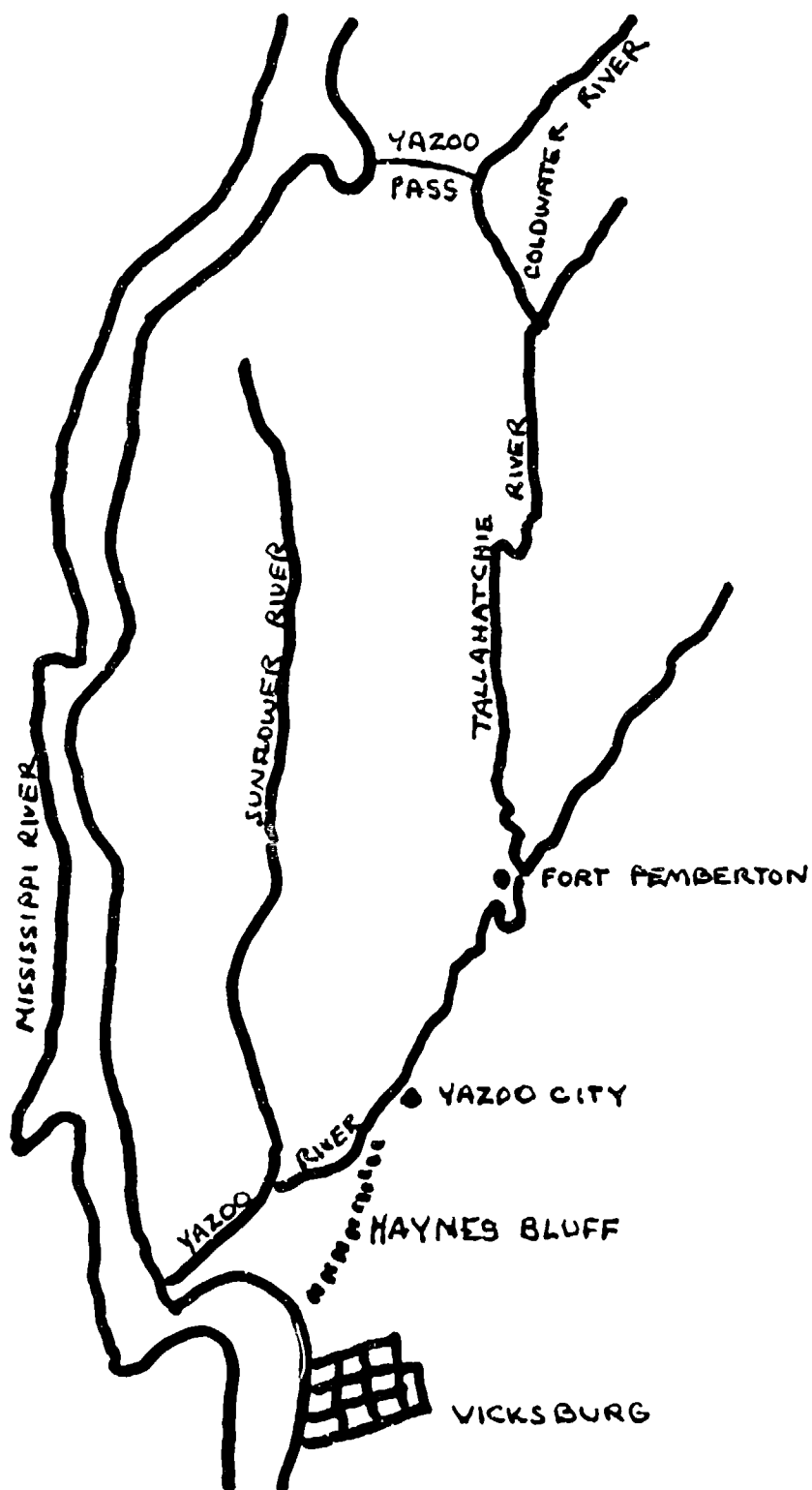
APPENDIX E

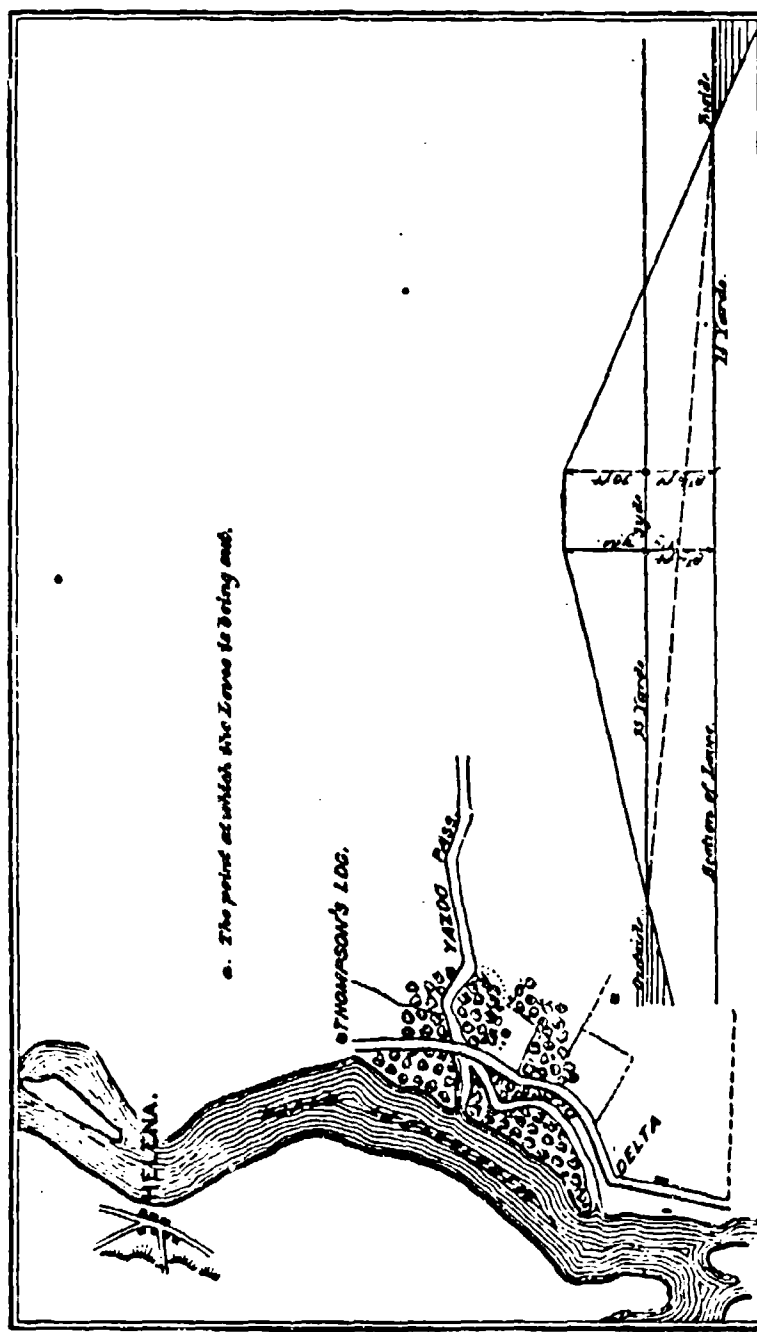


From the Report of MG Butler, 17 July 1862, The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies 128 vols. (Washington: Government Printing Office, 1880-1901) series I, 24 pt 1: 30.

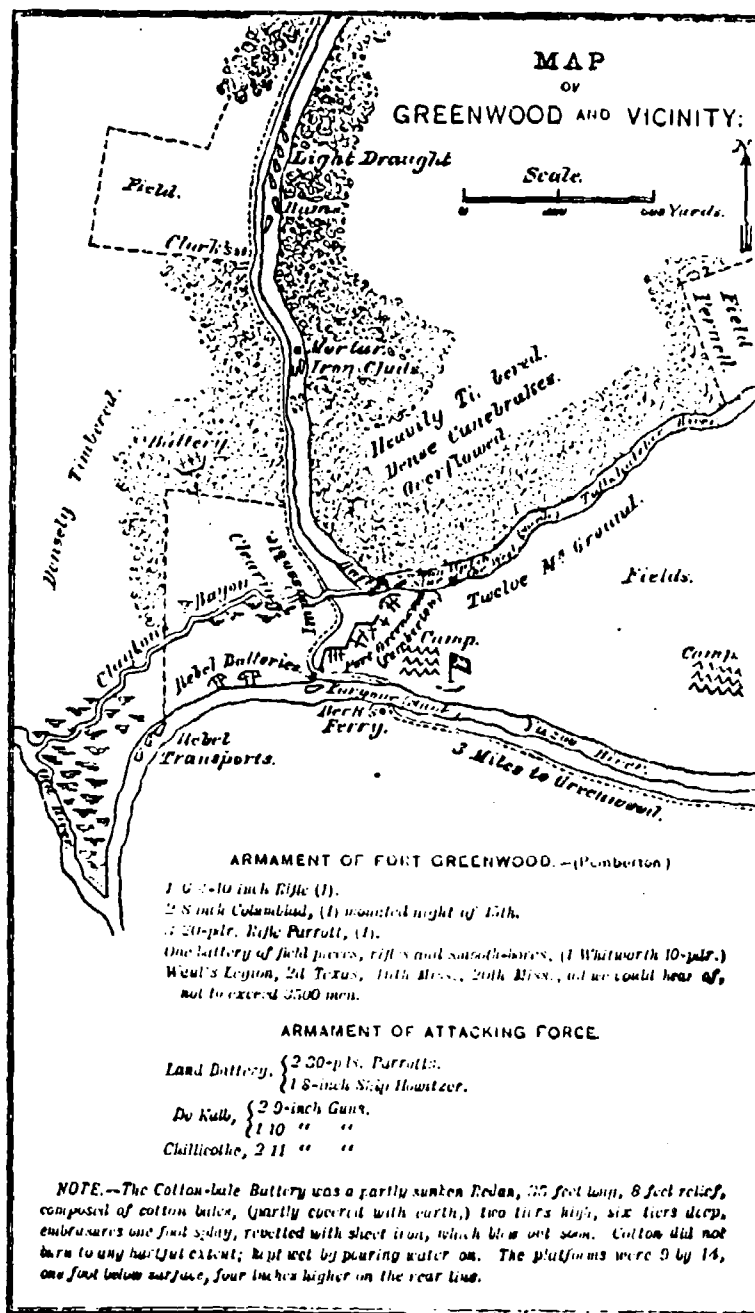
APPENDIX F

THE YAZOO PASS





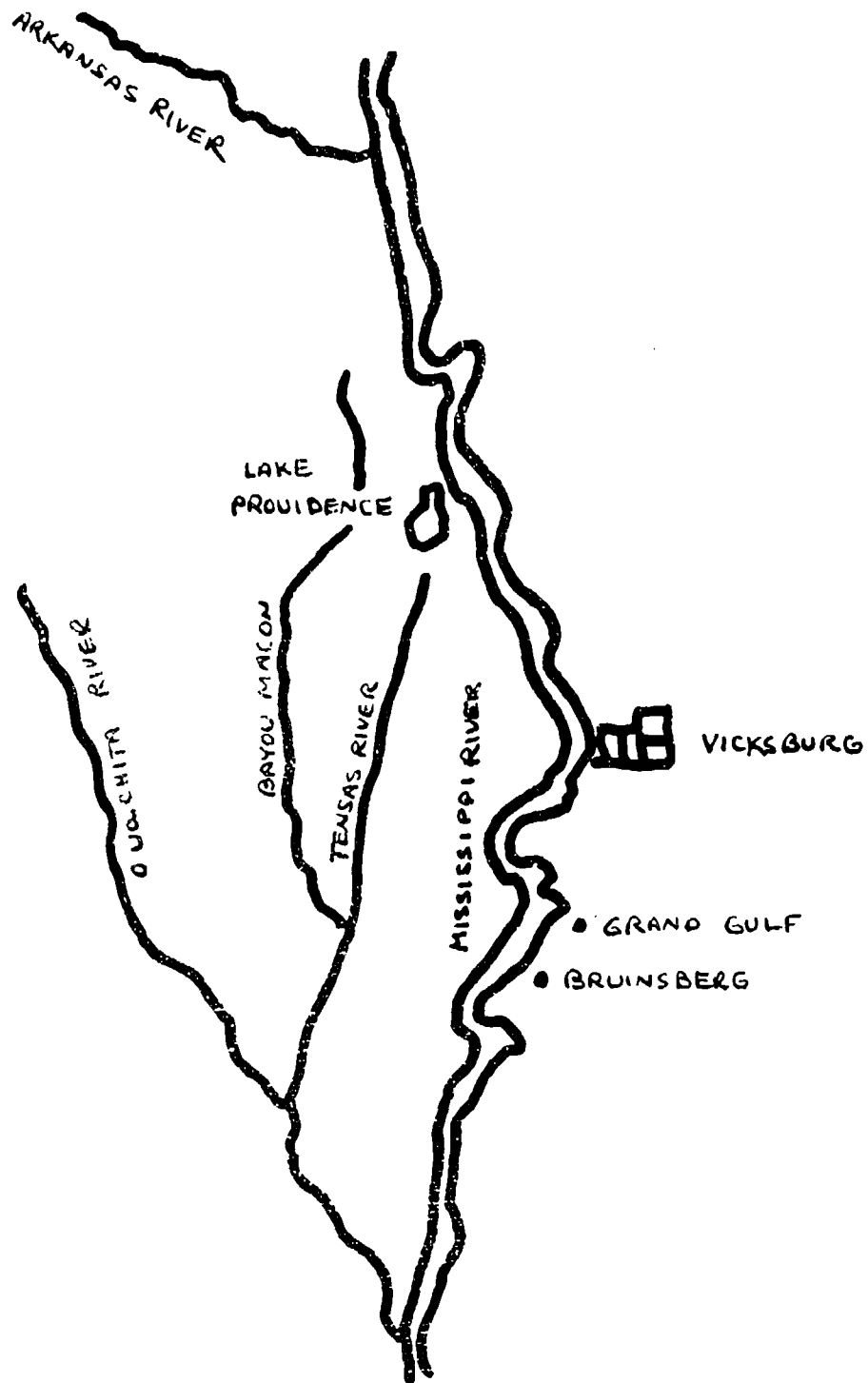
From the Report of Lieutenant Colonel Wilson, 2 February 1863, The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies 128 vols. (Washington: Government Printing Office, 1880-1901) series I, 24 pt I: 371.



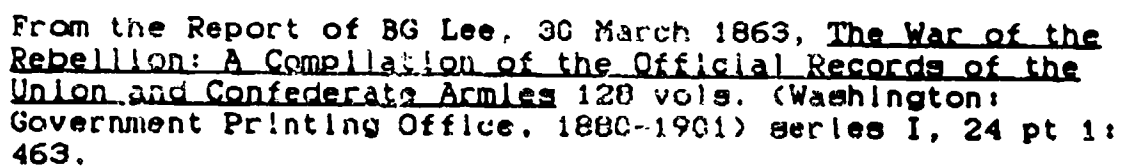
From the Report of LTC Wilson, 9 April 1863 The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies 128 vols. (Washington: Government Printing Office, 1880-1901) series I, 24 pt 1: 389.

APPENDIX G

LAKE PROVIDENCE

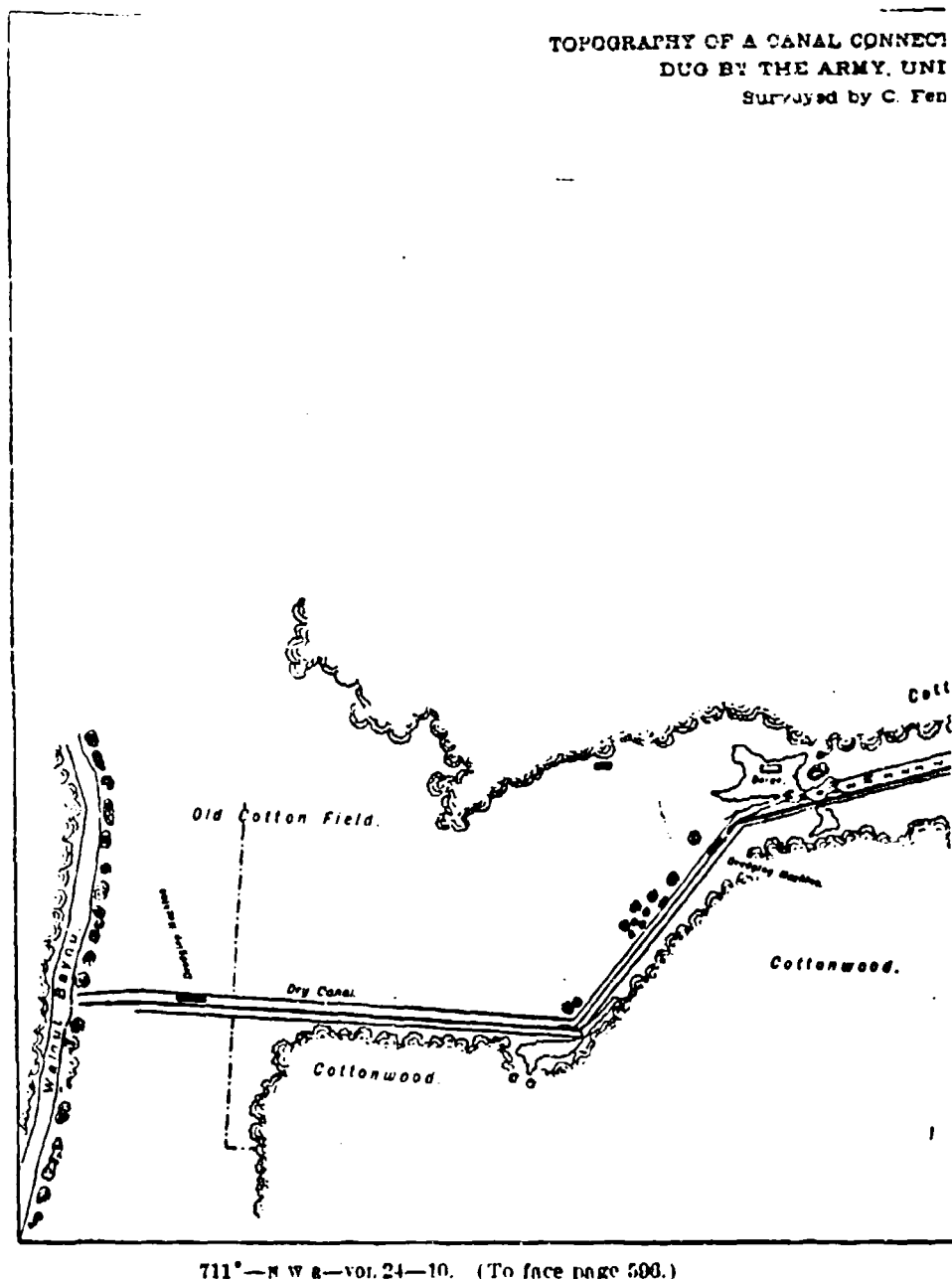


STEELE'S BAYOU



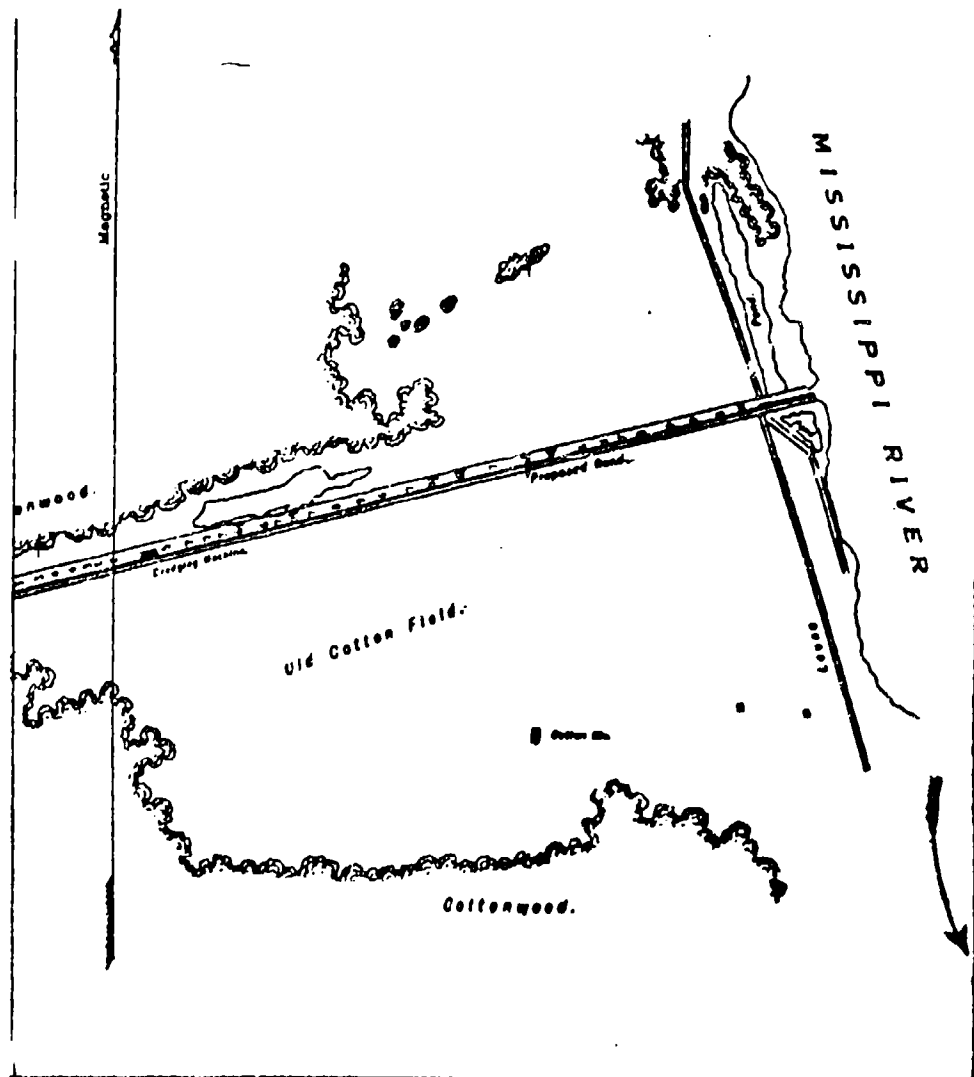
APPENDIX I

THE DUCKPORT CANAL



From the Report of MG Butler, 17 July 1862, Official Records of the Union and Confederate Navies in the War of the Rebellion 30 vols (Washington: Government Printing Office, 1880-1901), 24: 389.

ING WALNUT BAYOU WITH THE MISSISSIPPI RIVER.
 ER GENERAL GRANT, IN APRIL, 1863.
 dall and A. Strausz, April 28, 1863.



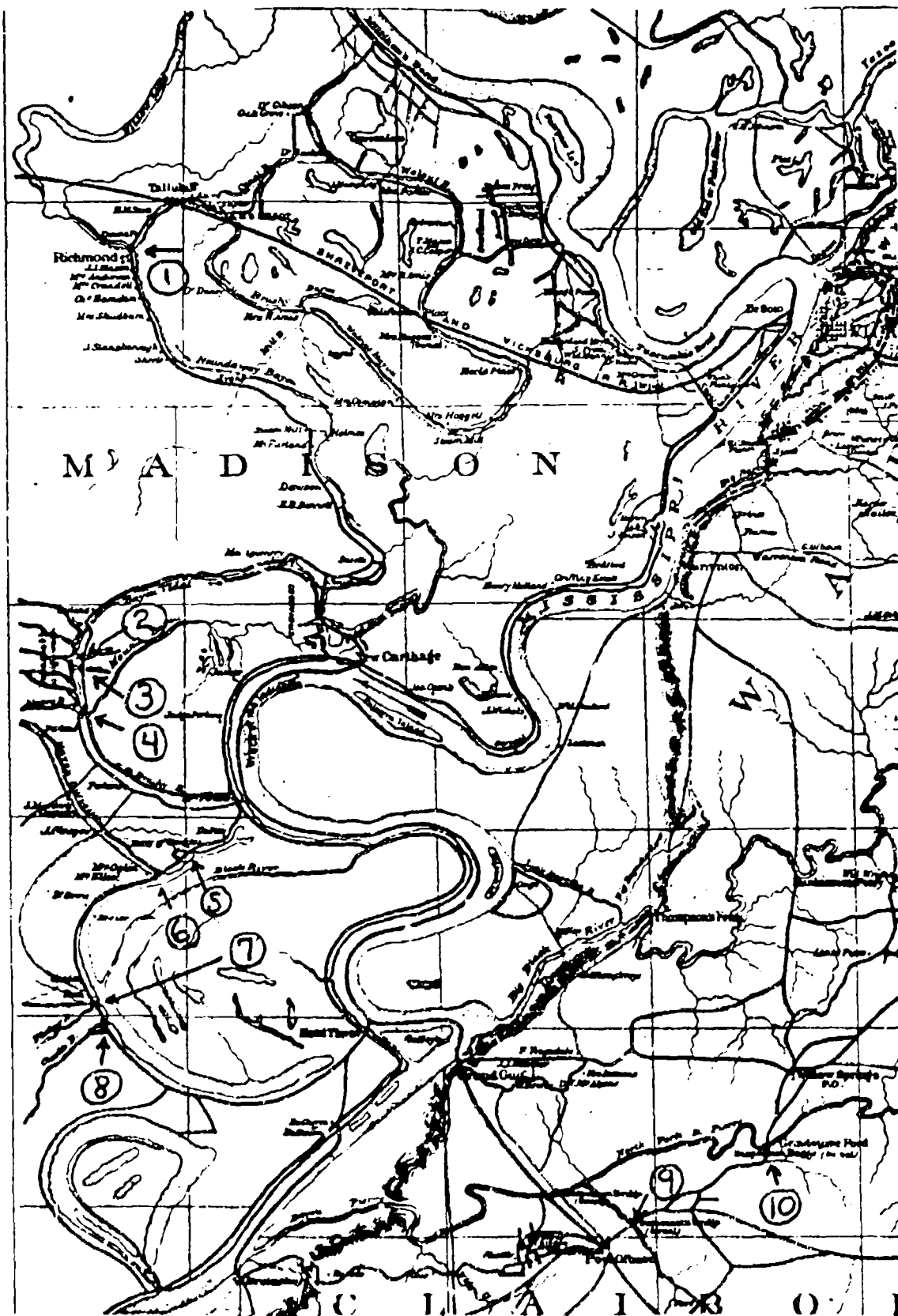
APPENDIX J

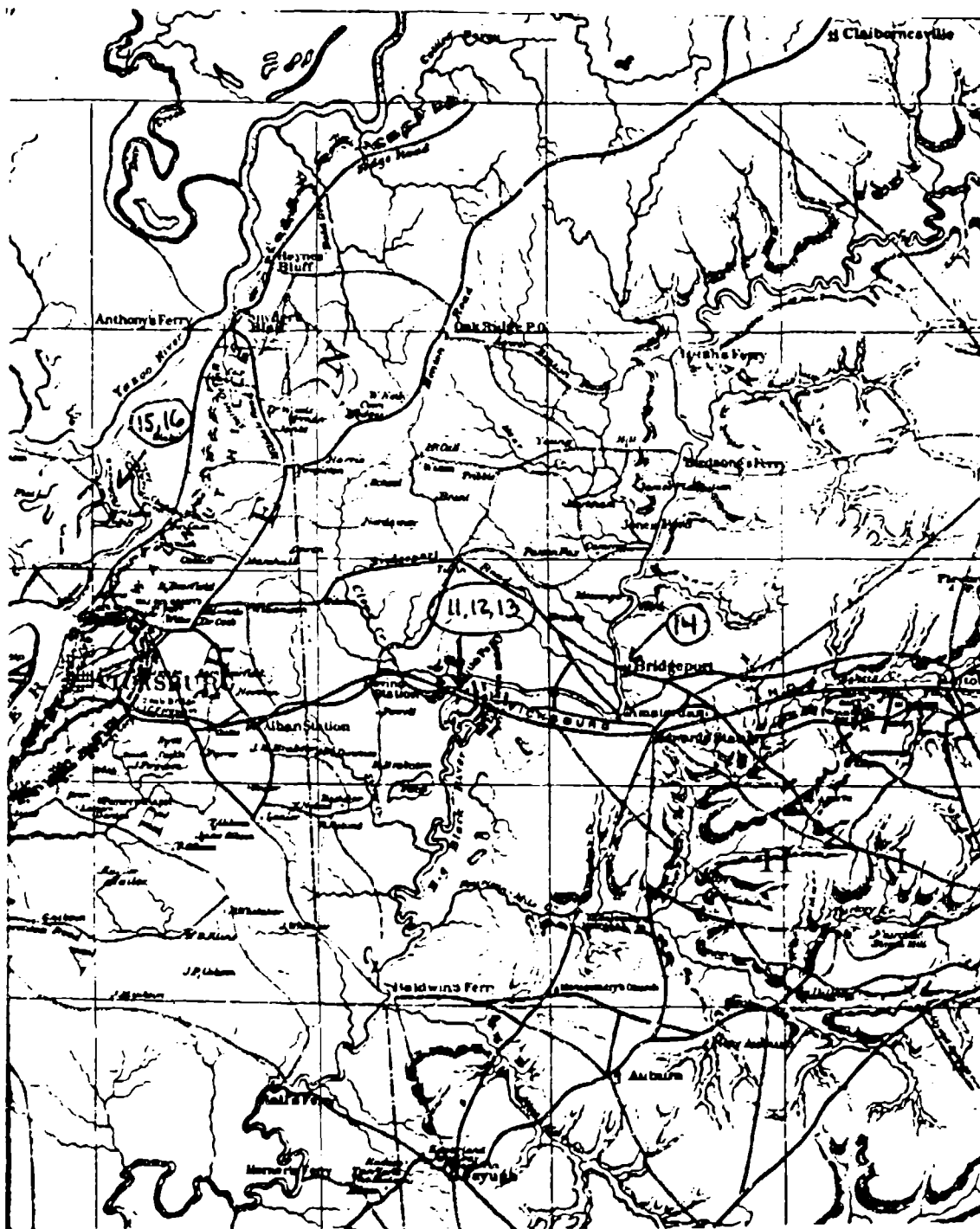
BRIDGES CONSTRUCTED

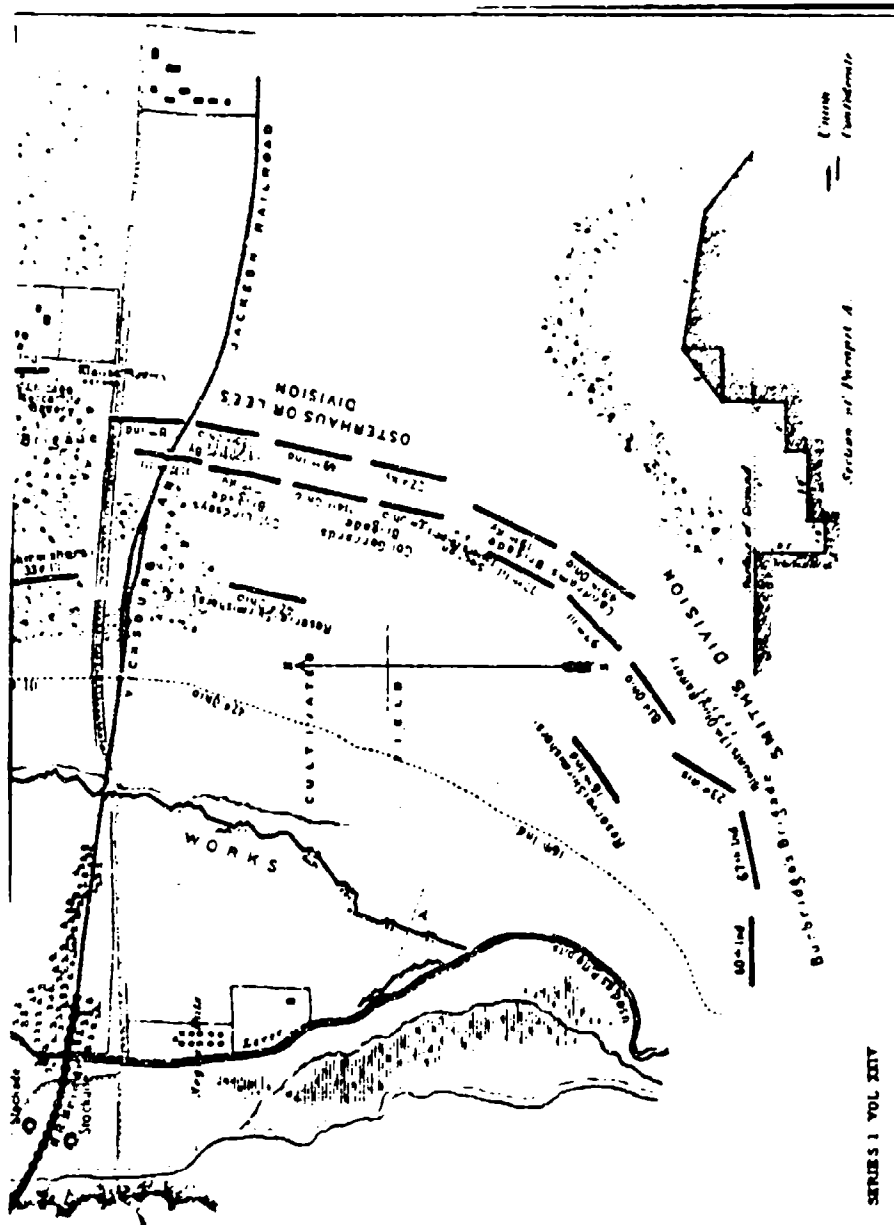
The following is a list of the key bridges constructed during the Maneuver Phase of the Vicksburg Campaign. There were many other bridges constructed during the entire campaign, but I have selected these because their construction was absolutely critical to the outcome. The last two pages of this appendix consist of a map from the Atlas to Accompany the Official Records of the Official Records of the Union and Confederate Armies, plate 36, showing the location of the bridges by their number from this list.

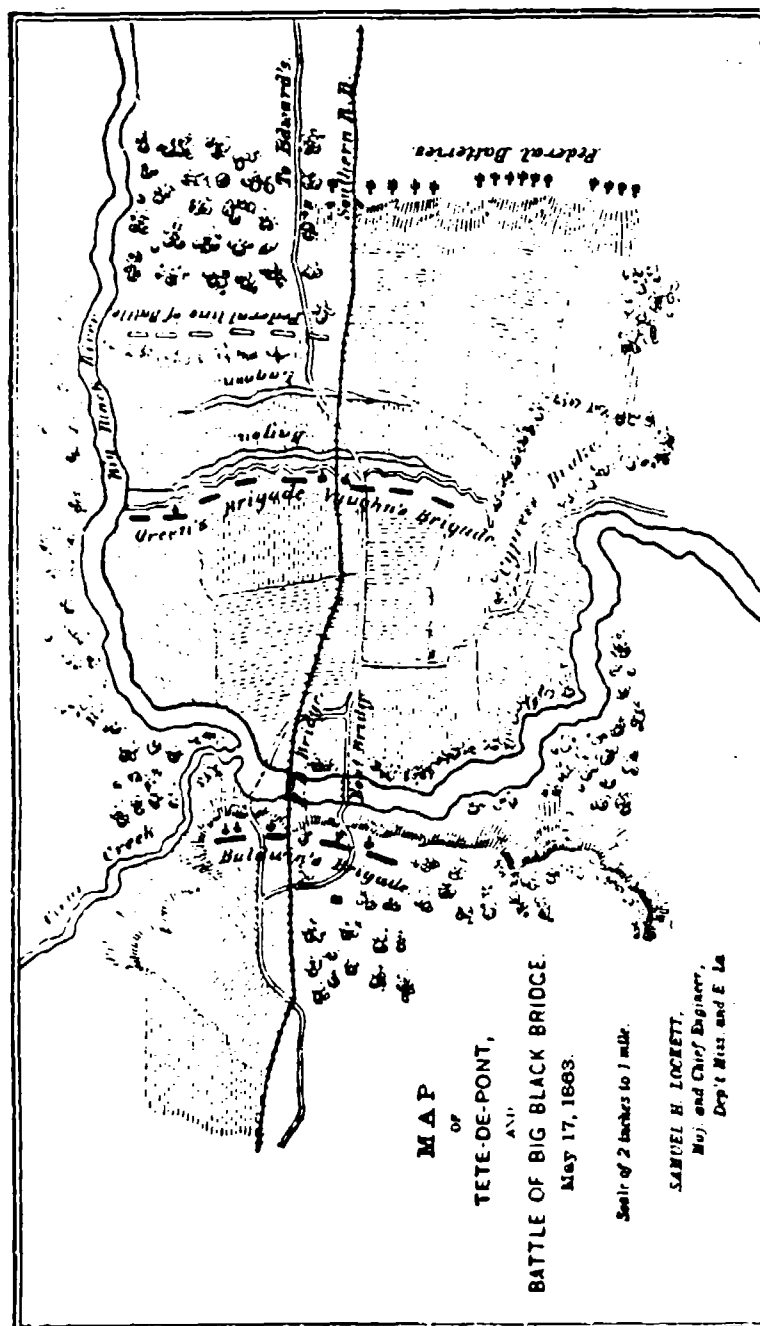
1. Bridge over Roundaway Bayou at Richmond. A 200 foot log bridge constructed by the Kentucky Company of Engineers and Mechanics.
2. Bayou Vidal between Smith's and Perkins's plantation. 362 feet long. Constructed by the Kentucky Company of Engineers and Mechanics.
3. Bridge between bridge number two and the bridge across Negro Bayou. 150 feet long. Constructed by the Kentucky Company of Engineers and Mechanics.
4. Bridge across Negro Bayou 550 feet long. Constructed by the Kentucky Company of Engineers and Mechanics.
5. Bridge across Holt's Bayou. 80 feet long. Constructed by the 49th Indiana Volunteer Infantry Regiment and the 114th Ohio Infantry Regiment under the supervision of Lieutenant Tunica, engineer.
6. Bridge across Durassett's Bayou. 120 feet long. Constructed by the 49th Indiana Volunteer Infantry Regiment under the supervision of Lieutenant Tunica, engineer.
7. Bridge across Phelps' Bayou. 130 feet long. Constructed by the 49th Indiana Volunteer Infantry Regiment and 114th Ohio Infantry Regiment under the supervision of Lieutenant Tunica, engineer.
8. Bridge across Clark's Bayou. 150 long. Constructed by the 49th Indiana Volunteer Infantry Regiment and 114th Ohio Infantry Regiment under the supervision of Lieutenant Tunica, engineer.

9. Bridge across the South Fork of Bayou Pierre. Constructed by the Kentucky Company of Engineers and Mechanics.
10. Bridge across the North Fork of Bayou Pierre. Repaired by the Kentucky Company of Engineers and Mechanics.
11. Bridge across the Big Black River. Constructed by 13th Corps, the Kentucky Company of Engineers and Mechanics.
12. Bridge across the Big Black River. Constructed by Quimby's Division, 17th Corps.
13. Bridge across the Big Black River. Constructed by General Ransom's Bde of McArthur's Division, 17th Corps.
14. Pontoon bridge across the Big Black River emplaced at Bridgeport by General Sherman's Fifteenth Corps.
15. Bridge across the swamp from the Yazoo River across Chickasaw Bayou to the high ground at the rear of Grants Army laying siege to Vicksburg. Its length was 300 feet long. The bridge initially involved the use of the Army's only pontoon bridge. Later in the siege it was replaced with a more permanent structure. Constructed by the Engineer Regiment of the West, Klosterman's Pioneer Company, and the Eighty-third Indiana.
16. A second bridge located on the road from the Yazoo River across Chickasaw Bayou to the rear of Grant's Army. 250 feet long.



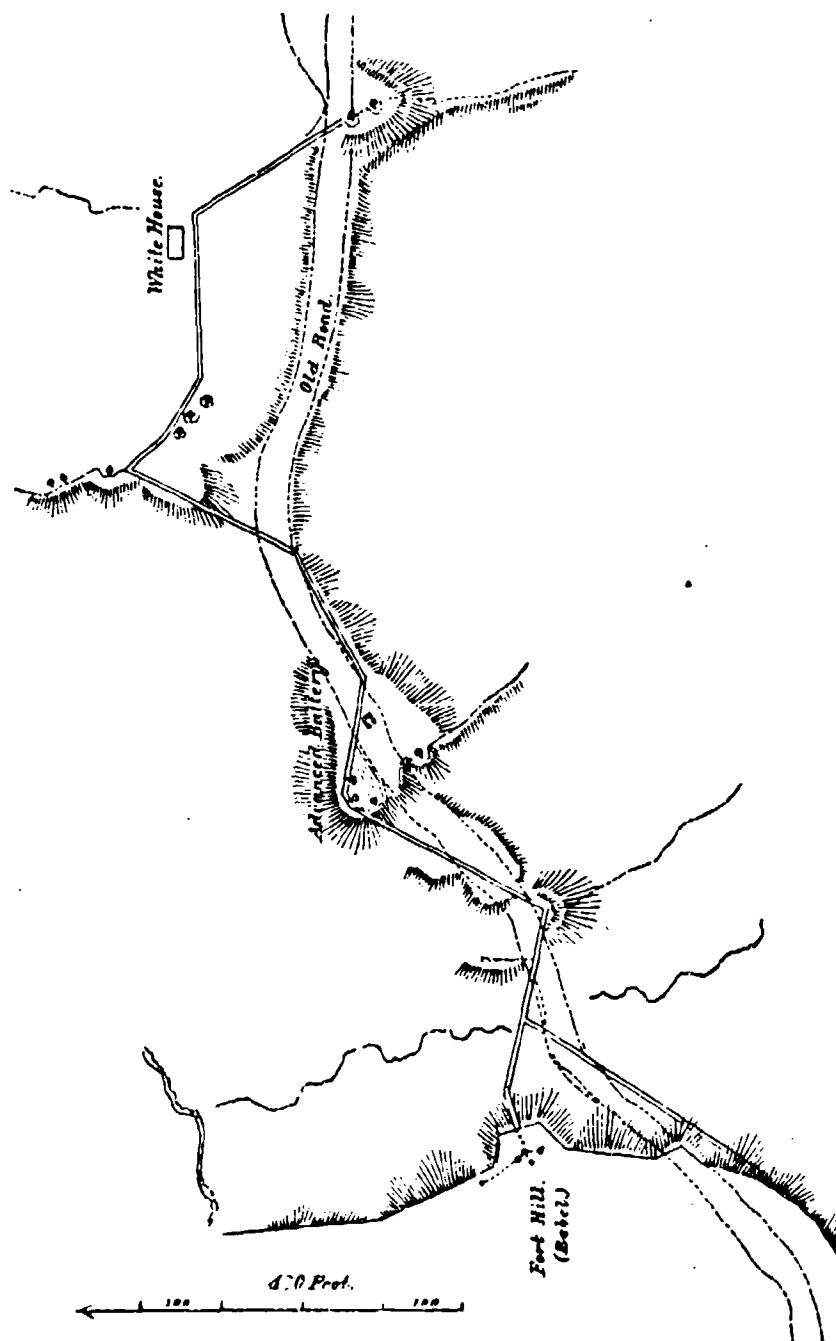






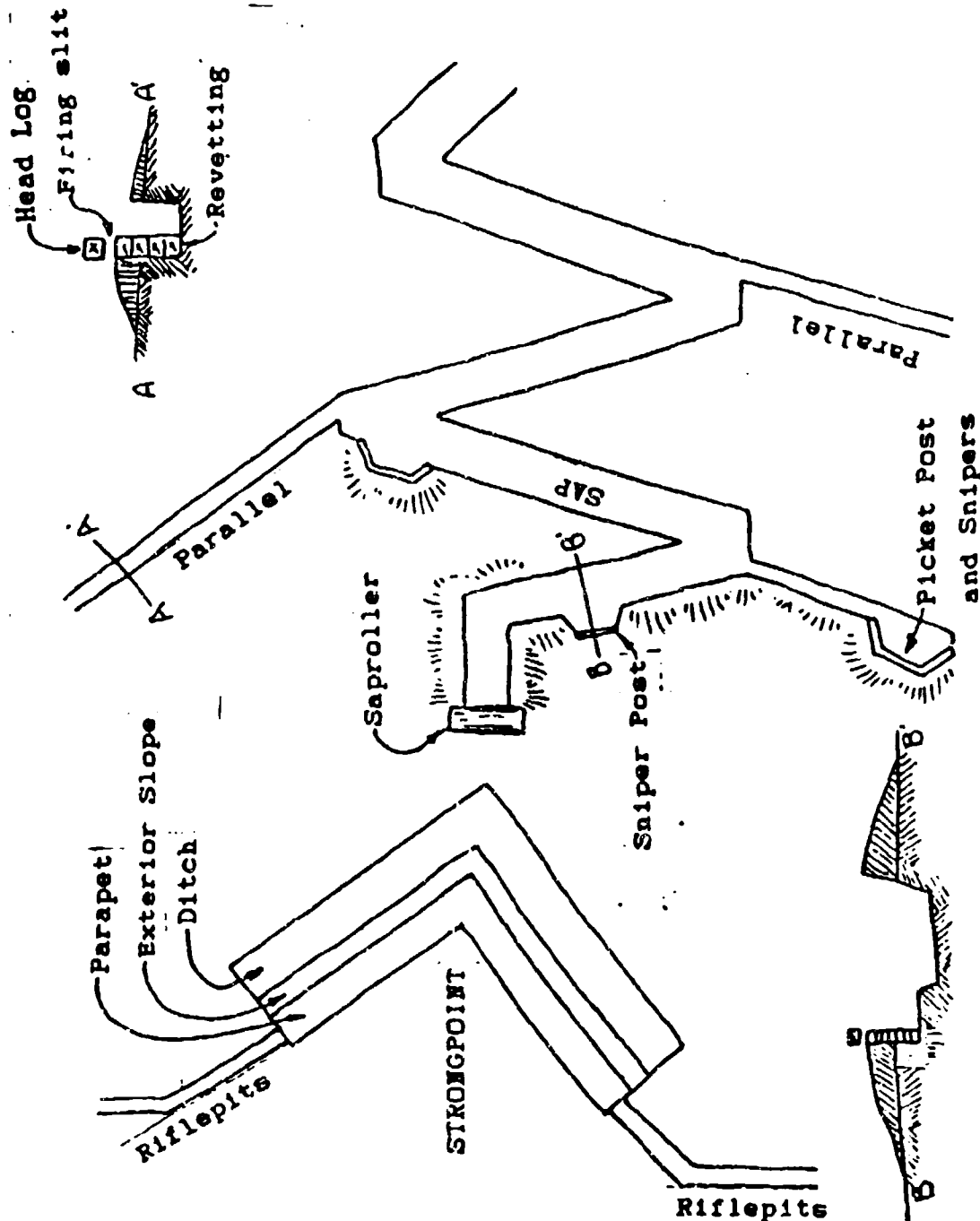
From the Report of Major Lockett, 23 July 1863, The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies 128 vols. (Washington: Government Printing Office, 1880-1901) series I, 24 pt 2: 72.

APPENDIX L LOGAN'S APPROACH



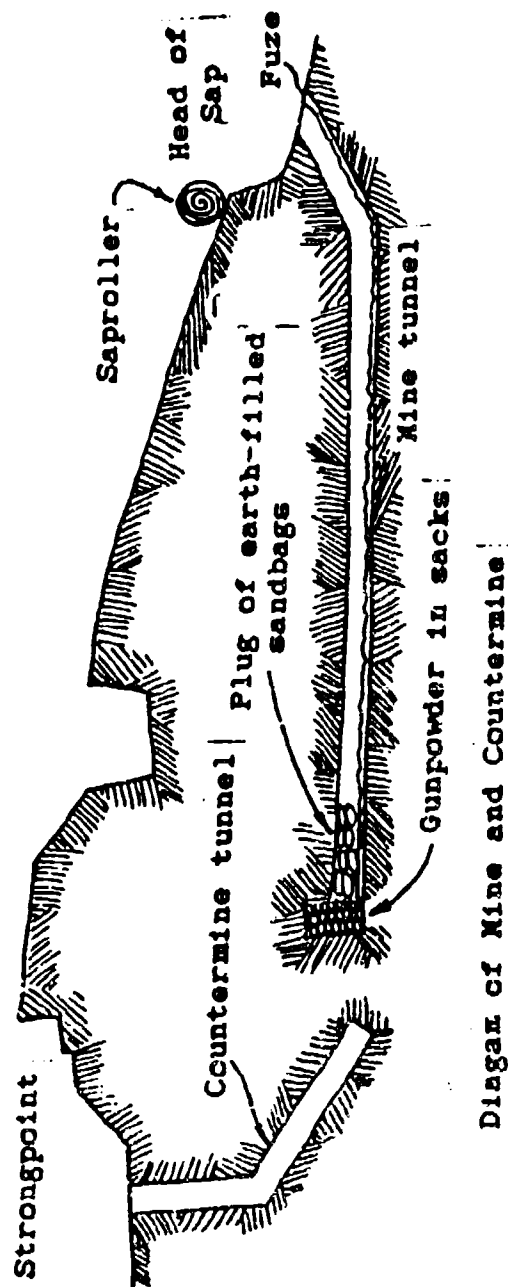
From the Report of CPT Hickenlooper, 23 October 1863, The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies 128 vols. (Washington: Government Printing Office, 1880-1901) series I, 24 pt 2: 201.

APPENDIX M SAPS AND PARALLELS



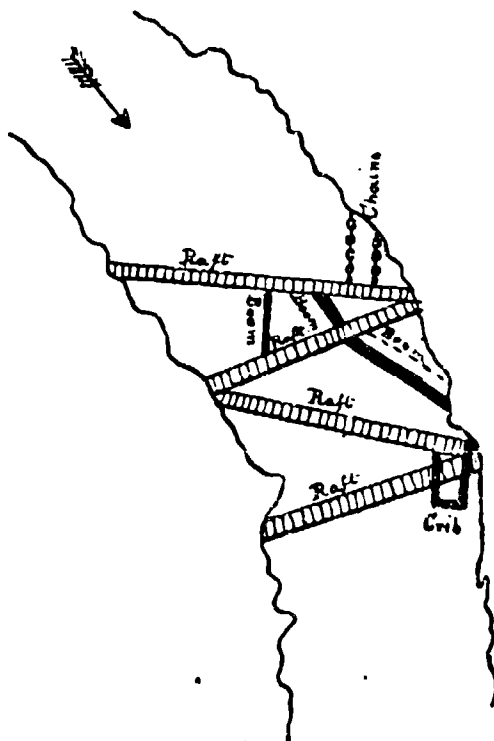
Schematic Diagram of a Typical Approach: Saps and Parallels

From Warren E. Grabau, "The Vicksburg Campaign Preliminary Study Materials and Maps of the 1989 Second U.S. Army Commander's Staff Ride," (Vicksburg, Mississippi: 412th Engineer Command, June 1989), 315.



From Warren E. Grabau, "The Vicksburg Campaign Preliminary Study Materials and Maps of the 1989 Second U.S. Army Commander's Staff Ride," (Vicksburg, Mississippi: 412th Engineer Command, June 1989), 315.

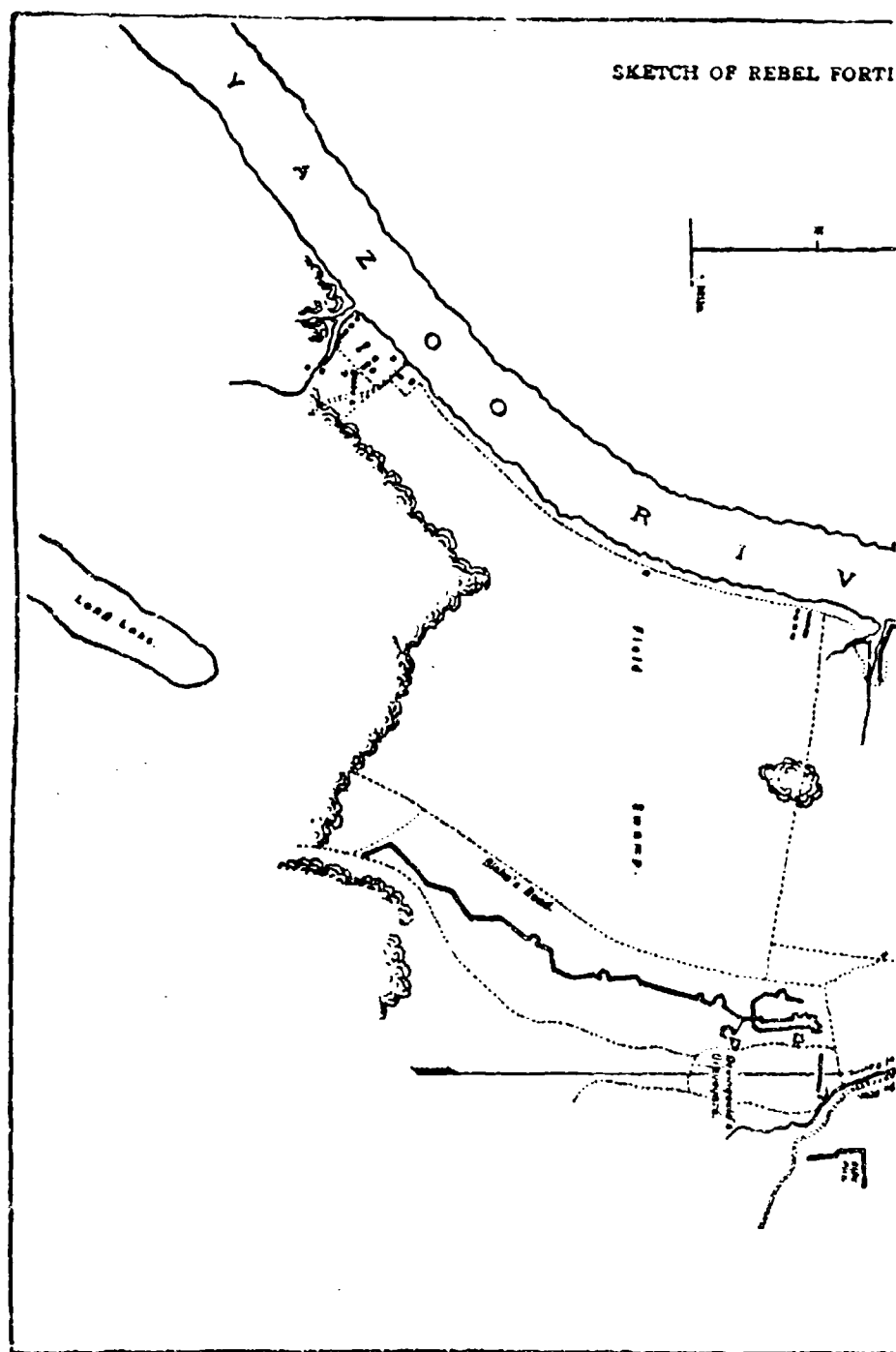
APPENDIX N
THE YAZOO RAFT



From the Report of LTC Lovell, 26 January 1863, Official Records of the Union and Confederate Navies in the War of the Rebellion 30 vols. (Washington, D.C.: Government Printing Office, 1911), series I, 24: 712.

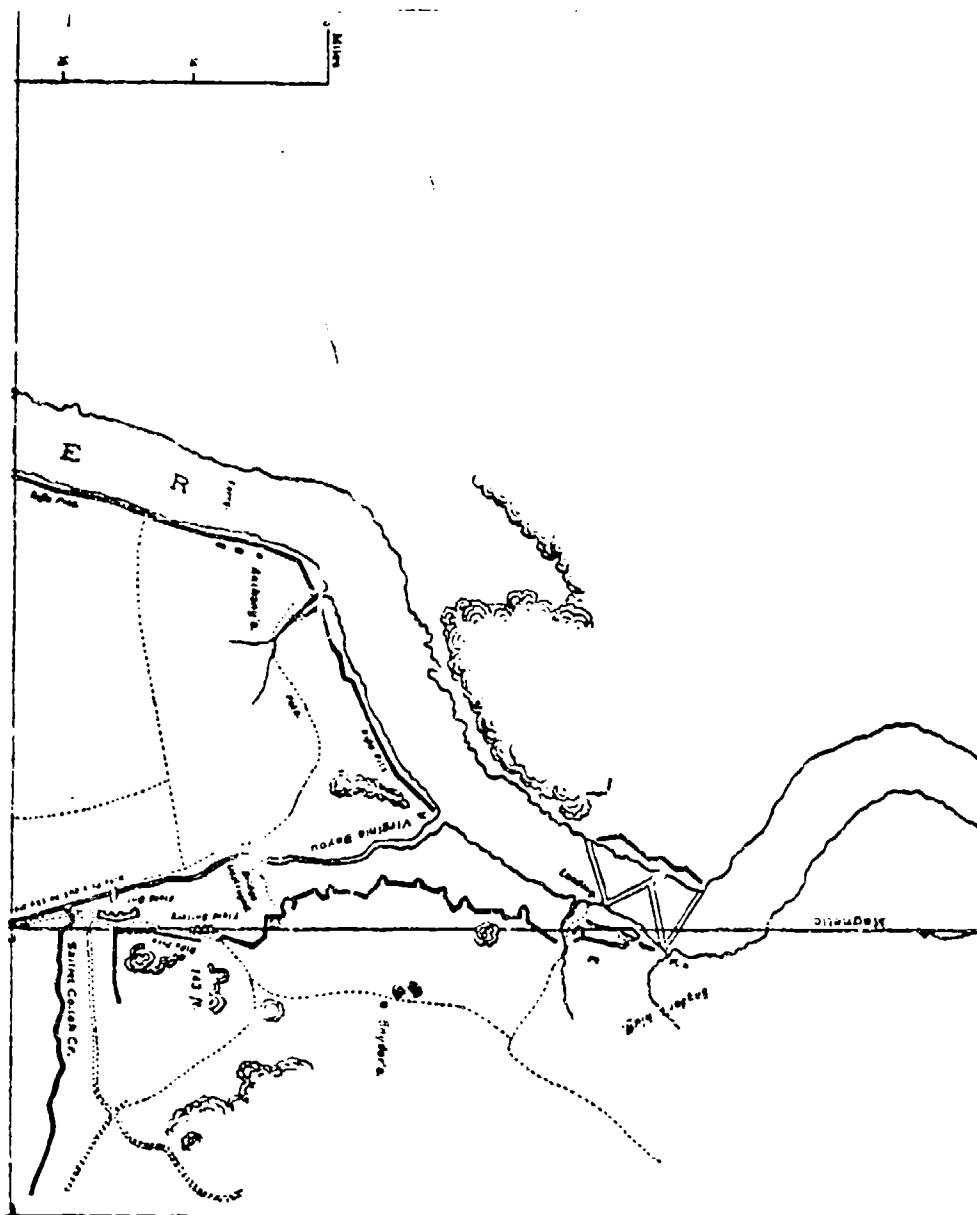
APPENDIX O

FORTIFICATION AT HAYNES' BLUFF

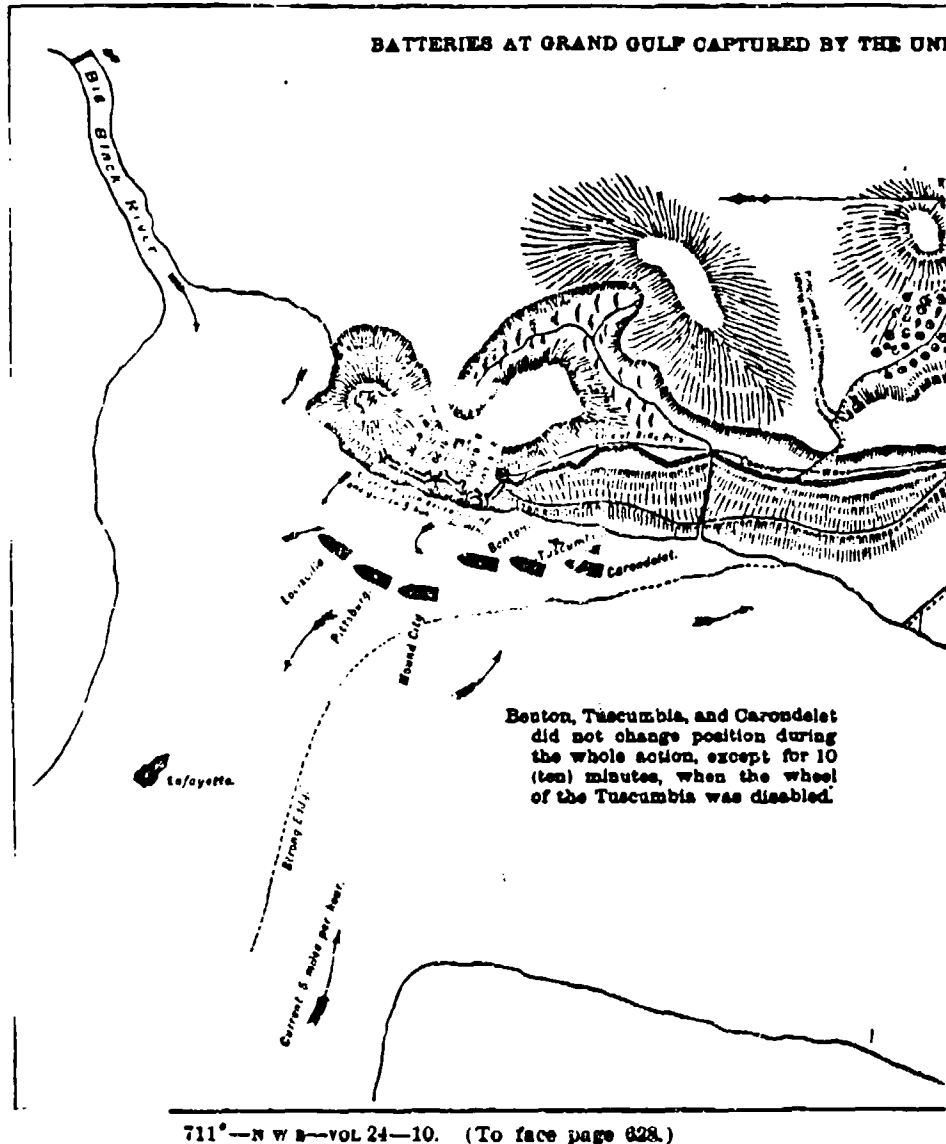


From the Report of LTCDR Walker, 2 May 1863, Official Records of the Union and Confederate Navies in the War of the Rebellion 30 vols. (Washington, D.C.: Government Printing Office, 1911), series I, 24: 590.

LOCATIONS AT HAYNES' BLUFF.

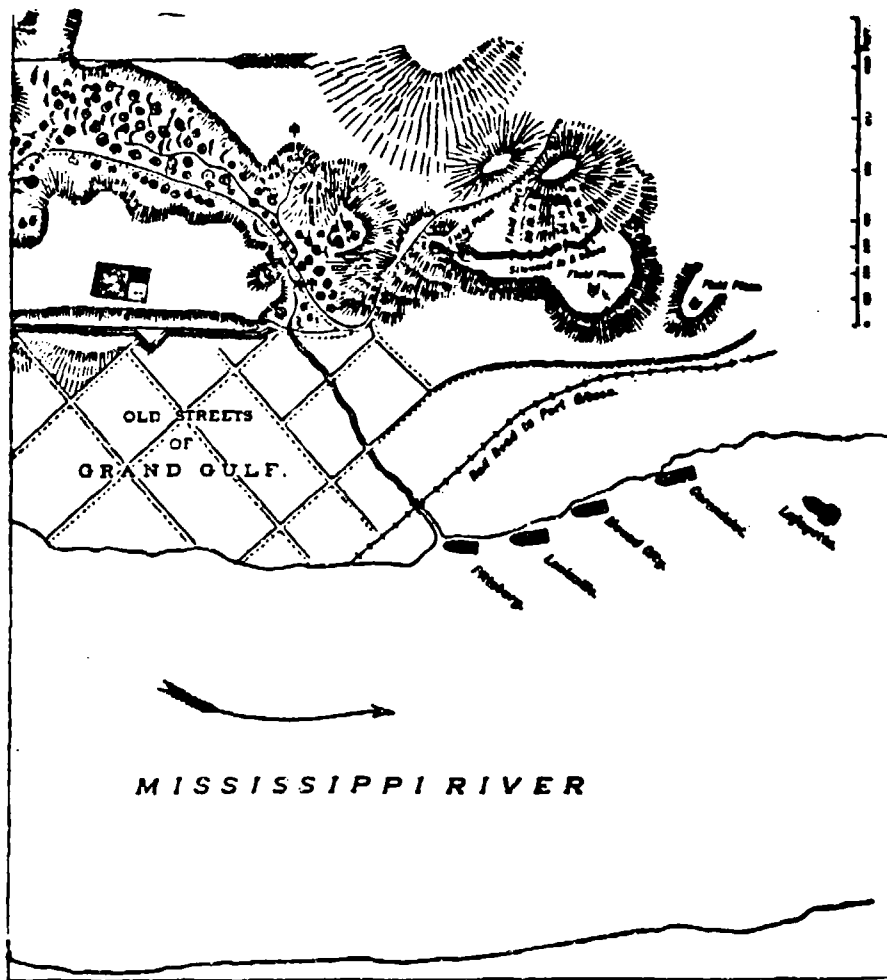


APPENDIX P
FORTIFICATIONS AT GRAND GULF



From THE, Official Records of the Union and Confederate Navies in the War of the Rebellion 30 vols. (Washington, D.C.: Government Printing Office, 1911), series I, 24: 629.

UNITED STATES MISSISSIPPI SQUADRON, MAY 3, 1863.



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